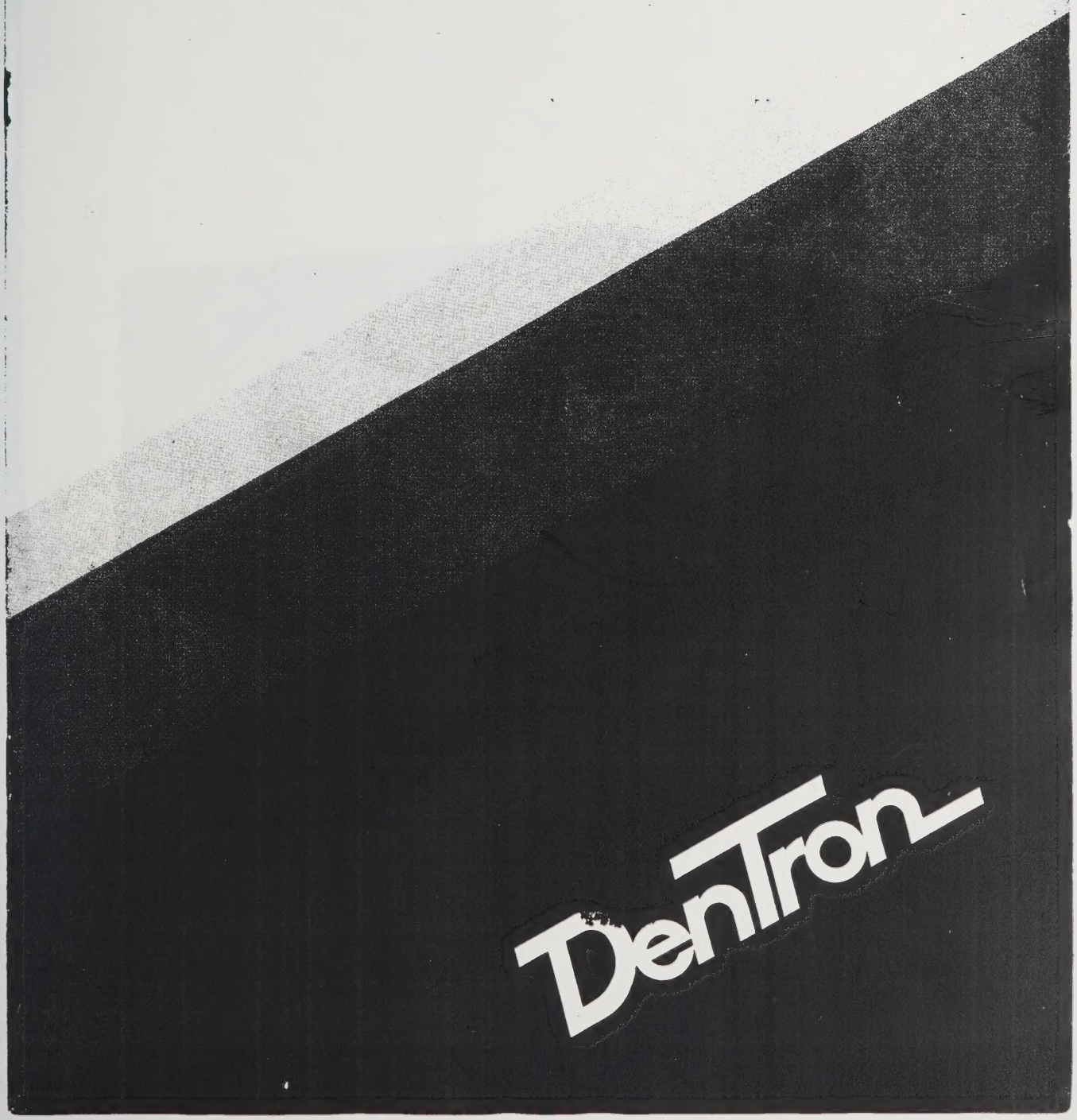
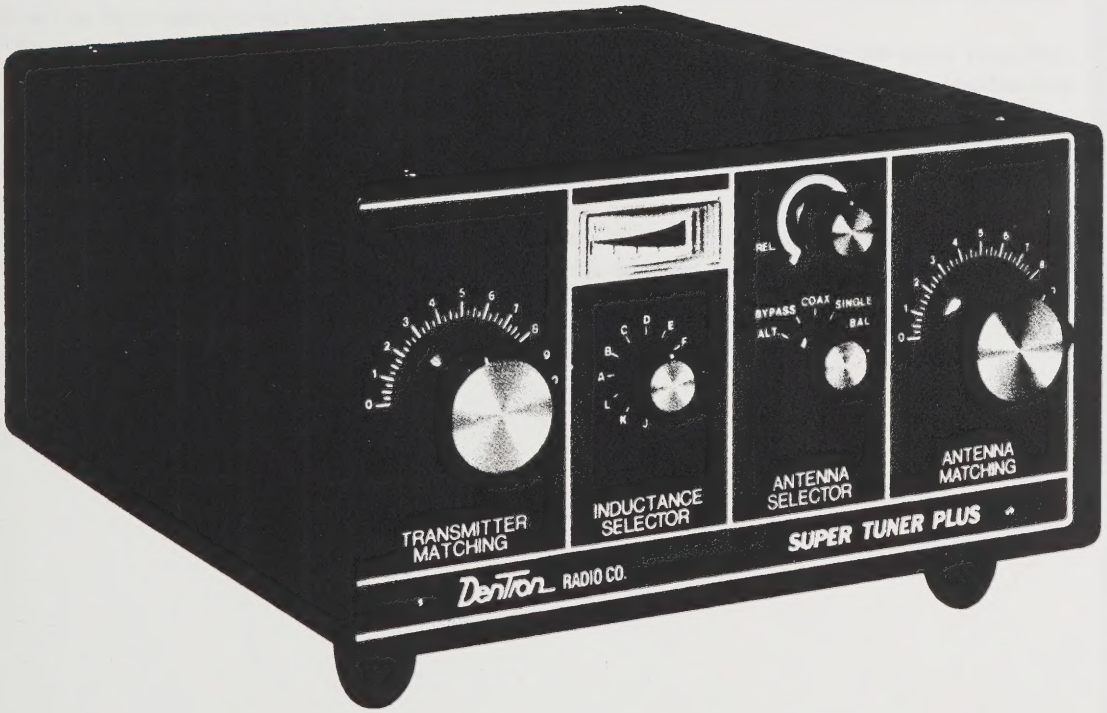
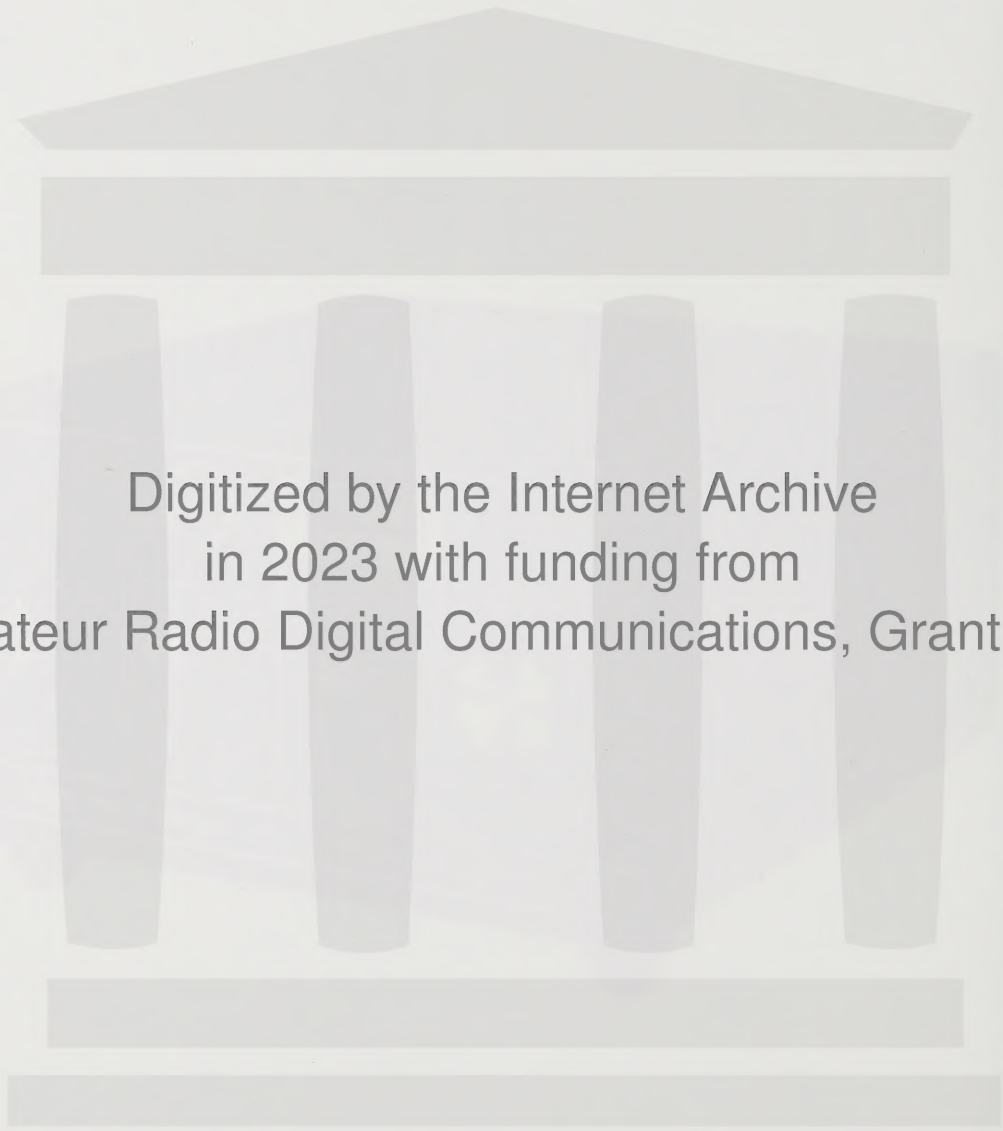
Operating Manual
Super Tuner Plus




REL
BYPASS
COAX
SINGLE
ALT.
BAL
TRANSMITTER MATCHING
INDUCTANCE SELECTOR
ANTENNA SELECTOR
ANTENNA MATCHING
SUPER TUNER PLUS
Denton RADIO CO.



DenTron 160-10 Super Tuner Plus 1 kw

Introduction

The Super Tuner Plus is everything the famous DenTron Super Tuner is, and more! The Plus includes a front panel forward relative power meter, and a built-in front panel antenna switch that handles up to four antennas.

When properly adjusted, the Super Tuner Plus will tune out load reactance and transform the load impedance to 50-70 ohms. A heavy duty 2 core balun is included, so antennas fed with open wire (balanced) feedline may be properly tuned to the desired operating frequency.

Single wire, balanced feed, and coax cable fed antenna systems can be used with the Super Tuner Plus, although everything from bedsprings to raingutters and downspouts have been successfully used by DenTron tuner owners. The unit allows front panel switching of your antennas, plus tuner bypass. Another antenna selector switch position allows for permanent installation of a dummy load, such as the DenTron Big Dummy, and when used with a VSWR meter lacking dual metering, you can measure both forward and reflected power at the same time.

Power handling capability of the Super Tuner Plus is 1 KW CW and 1200 Watts PEP SSB (both measured in DC input to the final amplifier). The unit is compact but rugged, in an all-metal tightly shielded cabinet and weighs in at less than 15 pounds.

Theory of Operation

When one installs an antenna system of any type, a complex load may exist at the input end of the feed line. Depending on the frequency in use and the feedline length, this load can be a very high or very low impedance, or somewhere in between. The DenTron Super Tuner Plus is designed to match these wide variations to your normal 50 ohm transmitter/receiver impedance, and thus give you maximum efficiency in both transmit and receive modes.

It is important to remember that nothing will compensate for coaxial feed line loss when it is terminated with something other than its normal impedance. In other words, a severe mismatch at the antenna end of a 50 ohm feedline can be tuned out at the other end of the line, but you still have some degree of loss in the coax, and if it is high enough, the results can be inefficiency in both the transmit and receive functions. The Super Tuner Plus, however, will overcome any ill effect on your transmitting/receiving equipment, since it will see the nominal 50 ohm load offered by the tuner.

Remember, the closer your antenna system is to a fundamental or harmonic resonance, the better it will perform. The Super Tuner Plus gives you that big degree of flexibility required to put all of your power where it does the most good.

Unpacking Instructions

Carefully remove your Super Tuner Plus from its packing carton, making sure there is no damage evident from shipping. If there is any damage, notify the delivering shipper immediately, fully describing the damage.

Fully complete the DenTron Registration card included in the information package and return it to DenTron. Do not destroy the packing material, since it will be usable later on should you require factory service or need to transport the tuner for any other reason.

Installation

1. Connect a good earth ground to the ground terminal on the tuner's rear panel. A ground stake or rod is preferred, but a short, heavy wire clamped to a cold water pipe will usually suffice, if all connections are clean. It is most important to make your ground lead of the heaviest wire available and to use the shortest length possible between the ground point and tuner. Be sure to run an extension of the ground lead from your tuner to all other station equipment, especially your transmitter and linear amplifier.

   SEE BILL ORR'S HANDBOOK FOR MORE INFORMATION ON EARTH GROUNDING.

2. Connect your antennas to the appropriate output terminals on the rear panel.

   Bal. Out for balanced (or ladder) line feed.
   Coax Out for 50 or 70 ohm coax cable.
   Wire Out for long wire or random length antennas
   Alt. Out for secondary coaxial antenna or dummy load, such as the DenTron Big Dummy.
   This position is not tuneable.

3. Connect, if available, an SWR Bridge or Wattmeter (such as the DenTron W-2) between your exciter output and the tuner input connector on the rear panel, using quality 50 ohm coaxial cable. Be certain, in all cases, to solder the coax cable shield to the connector in making interconnecting or antenna lead-in cables. See Diagram 1.

SUPER TUNER PLUS IN BASIC SYSTEM

DIAGRAM 1

Operation

1. Set tuner controls as follows:
   A. For 50 ohm settings see Chart A.

BASIC CONTROL SETTINGS
(into a 50 ohm resistive load)

BAND & FREQ.	TRANS.	INDUCTANCE	ANT.
160 - 1.830	1	L	2.5
75 - 3.8	3	E	4.0
40 - 7.2	5.5	C	6.0
20 - 14.2	4	B	1.0
15 - 21.3	3.5	B	3.0
10 - 28.6	8.25	A	8.0

CHART A

   B. For an unknown antenna system:
   160-40 meters - Transmitter and Antenna controls at 5 on respective scales. Inductance Selector to position A.
   20-10 meters - Transmitter and Antenna controls at 6 on respective scales. Inductance Selector to position A.

2. Turn the front panel sensitivity control fully clockwise.

3. Key your exciter and apply just enough RF power to cause a reading on the relative power meter and/or an SWR bridge-wattmeter.

Caution

Keep your exciter power output level as low as possible until you have reached an optimum match. Increase power gradually, readjusting the tuner with each step up in power.

4. Next, rotate the inductance selector for a minimum reading on the station VSWR meter, and/or a maximum reading on the front panel relative power output meter. Be sure to adjust the front panel sensitivity control as necessary.

5. Next tune the antenna matching and then the transmitter matching controls for minimum reading on the VSWR meter and/or a maximum reading on the front panel relative power output meter.

6. Remember that all three front panel tuning controls interact with each other, so readjust each one until you have reached an absolute minimum reading on your VSWR meter, and/or a maximum reading on the front panel relative power meter.

7. Apply full drive to your final amplifier and set the relative power meter to read full scale.

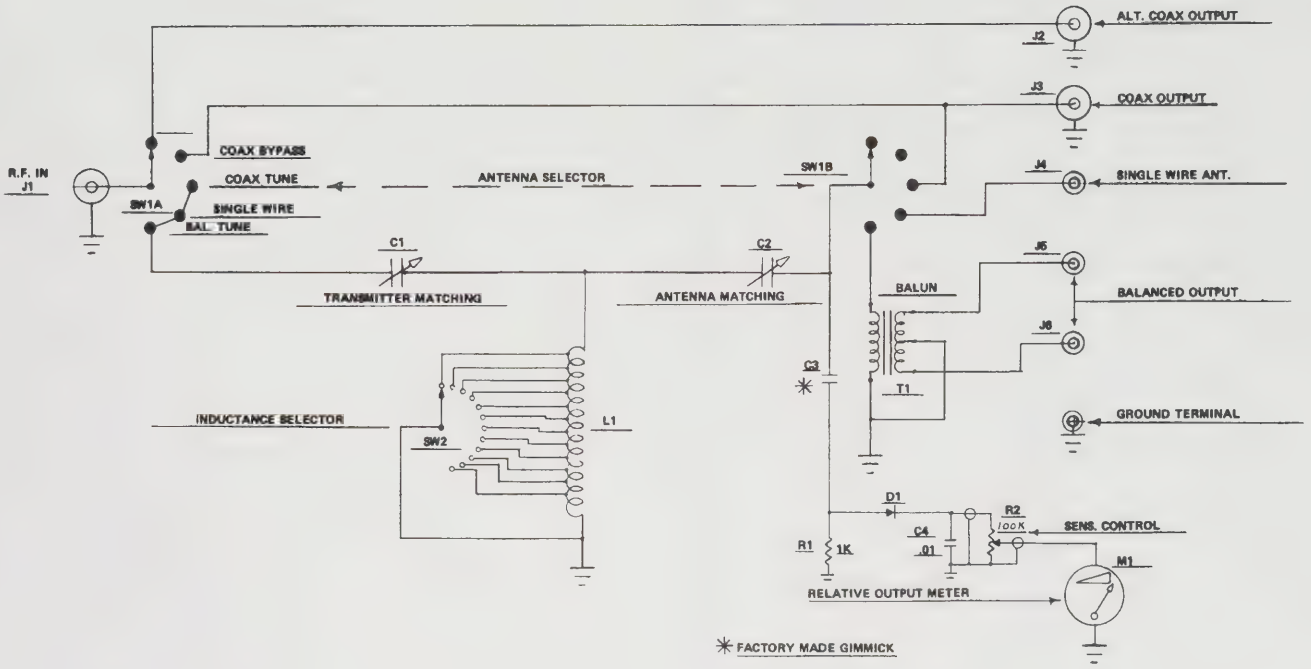
8. Unkey the exciter and set it to operate in the SSB mode. Your modulation can now be set correctly by observing the relative power meter. It should never go beyond 75% of full scale, or you will probably be flat topping, etc.

9. Once you've tuned up, make a record of each tuner setting per band. That will make for quick band changing.

10. After your VSWR meter is tuned to the lowest possible point leave your SWR bridge/power meter in the reflected position, and use the relative power output meter on the tuner to observe forward power.

Super Tuner Plus Parts List

CAPACITORS:	
C1	500 Pf Variable
C2	500 Pf Variable
C3	Sensing Network
C4	.01 Disc. 1 KV
RESISTORS:	
R1	1K, ½W Carbon
R2	100K Pot
INDUCTORS:	
L1	Tapped Inductor
T1	4:1 Balun XFMR.
SWITCHES:	
SW1 A&B	5 Pos. DP ceramic SW.
SW2	12 Pos. SP ceramic SW.
CONNECTORS:	
J1, J2, J3	SO 239's
J4, J5, J6	Ceramic Feed thrus
MISC.:	
D1	1N6263
M1	0-1 MA MTR.



SCHEMATIC, SUPER TUNER PLUS

SCALE

DATE: 5-12-78

APPROVED BY:

DRAWN BY: W.C.P

REVISED

DENTRON RADIO

DRAWING NUMBER 4-007

Limited Warranty

DenTron Radio is proud of the quality and workmanship of its communication equipment. If properly installed and operated in accordance with our instruction manual, it will give reliable performance. DenTron Radio extends to you as an owner of a new DenTron Radio Product the warranty set forth below:

For ninety (90) days from the date of original retail purchase, **DENTRON RADIO CO.** will either repair or replace, at its option, free of charge, any part or parts found to be defective in material or workmanship. Transportation charges for any parts submitted for replacement under this warranty must be paid by the purchaser.

This warranty will not apply to any part which has become inoperative due to misuse, excessive use, accident, neglect, improper maintenance, alterations, or unless the unit has been operated and maintained in accordance with the instructions furnished.

This warranty will not apply where the unit has been used commercially or when the unit has been used in conjunction with accessories not manufactured by **DENTRON RADIO CO.**

All implied warranties are limited in duration to ninety (90) days from the date of original retail purchase.

The provisions of this warranty specifically exclude any warranty or remedies for incidental or consequential damages.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

In order to obtain warranty service, send written notification to the following address: **DENTRON RADIO CO.**, Attn: Service Dept., 2100 Enterprise Parkway, Twinsburg, Ohio 44087.

Any written notification should include the model number of the unit, date and place of purchase, and a description of the defective part or condition. Do not return the unit or any parts unless requested to do so by **DENTRON RADIO CO.**

Although the return of the DENTRON Warranty Registration Card is not a condition precedent to warranty coverage and performance, the purchaser is encouraged to promptly return the Warranty Registration Card upon purchase in order to more easily facilitate the handling of any future service under these warranty provisions.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

DenTron
Radio Co., Inc.

2100 Enterprise Parkway
Twinsburg, Ohio 44087
(216) 425-3173

Operating Manual

160-10 AT/1kw

Super Tuner

DenTron

DenTron 160-10 Super Tuner
1kw

The DenTron 160-10 AT Antenna Tuner (Transmatch), will couple a 160 - 10 meter Transmitter to almost any type antenna system.

The 160-10 AT, when properly adjusted, will tune out load reactance, and transform the load impedance to 50 - 70 ohms.

The 160-10 AT also includes a highly efficient balun, so antennas fed with open-wire line may be properly tuned to desired frequency.

The 160-10 AT may be used with coax-fed antennas as well as end-fed single wire types.

Installation

1. Hook ground wire on back of tuner.
   a. A good ground is very important when using end-fed wire antennas.

2. From the rear panel marked "transmitter," connect a coax cable to an SWR bridge or preferably the DenTron W-2 Wattmeter that is connected to the station transceiver.

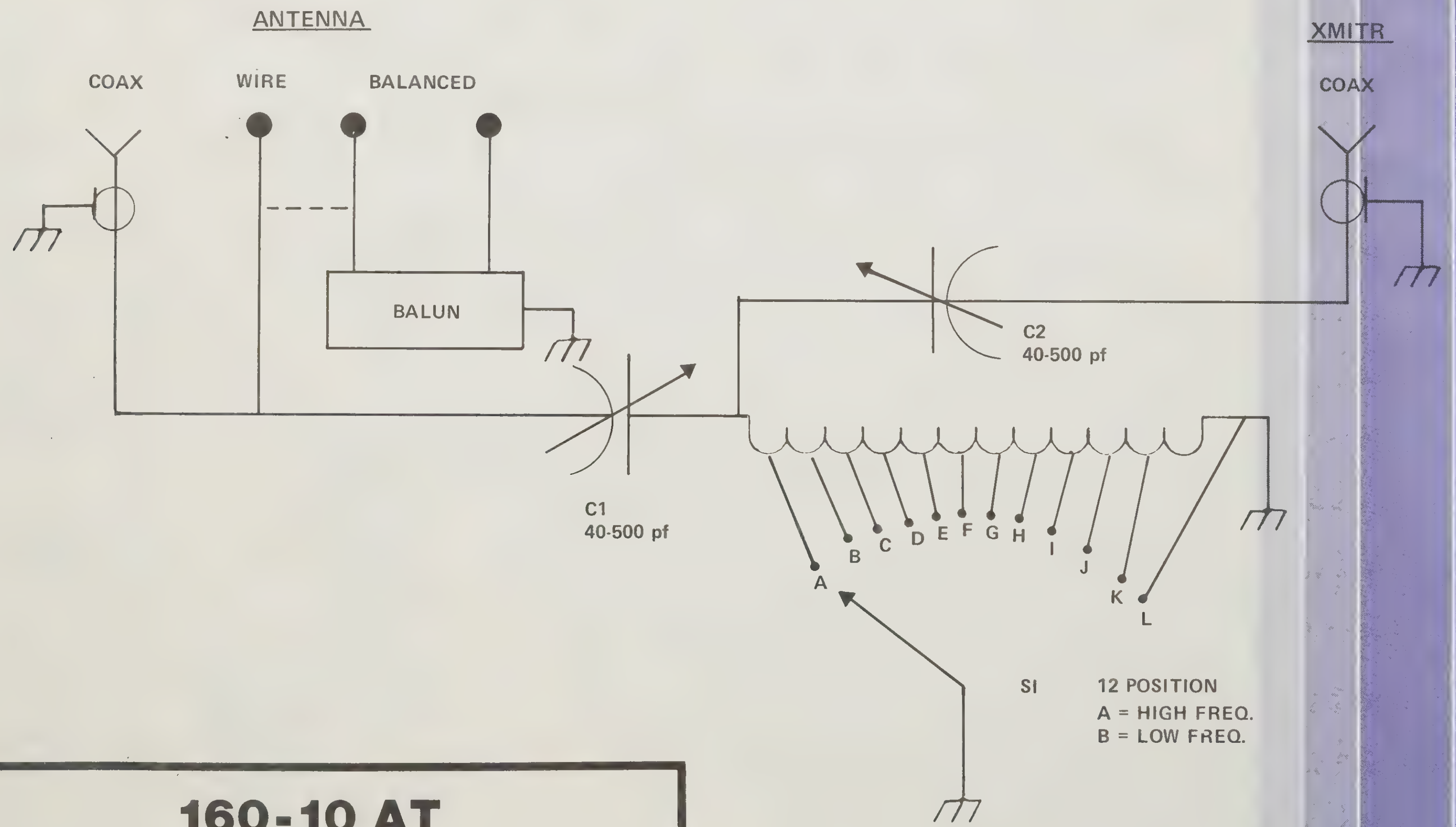
3. ANTENNA CONNECTIONS:
   a. Coax fed antennas to coax feedline.
   b. End-fed wire to SINGLE WIRE TERMINAL.
   c. OPEN WIRE FEED to BALANCED FEED LINE TERMINALS and also JUMPER WIRE to SINGLE WIRE TERMINAL (dotted line).

   PLEASE NOTE: If experiencing difficulty when tuning a random wire for 160M, place a jumper wire across terminals, as indicated by dotted line on the back of tuner. **CAUTION:** Remove this jumper wire for other frequency on single wire.

Operation

1. Set "Transmitter Matching" and "Antenna Matching" Controls to "5".
2. Listen on receiver for maximum band noise while turning inductance control for maximum noise.

   (A is highest frequency, L is lowest frequency)
3. Feed enough power through the system to get a reading on the SWR bridge or wattmeter in the reflected position.
4. Rotate Inductance Control for a drop in SWR reflected reading.
5. Adjust "Transmitter Matching" and "Antenna Matching" control for minimum SWR.
6. Now apply full power and touch up "Transmitter Matching" control if necessary.

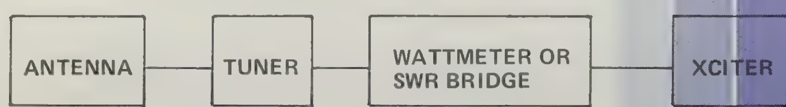


160-10 AT

BASIC CONTROL SETTINGS
(into a 50 ohm resistive load)

BAND & FREQ.	TRANS.	INDUCTANCE	ANT.
160- 1.830	1	L	2.5
75- 3.8	3	E	4
40- 7.2	5.5	C	6
20- 14.2	4	B	1
15- 21.3	3.5	B	3
10- 28.6	8.25	A	8

SUPERTUNER IN BASIC SYSTEM



DenTron

Limited Warranty

DenTron Radio is proud of the quality and workmanship of its communication equipment. If properly installed and operated in accordance with our instruction manual, it will give reliable performance. DenTron Radio extends to you as an owner of a new DenTron Radio Product the warranty set forth below:

For ninety (90) days from the date of original retail purchase, **DENTRON RADIO CO.** will either repair or replace, at its option, free of charge, any part or parts found to be defective in material or workmanship. Transportation charges for any parts submitted for replacement under this warranty must be paid by the purchaser.

This warranty will not apply to any part which has become inoperative due to misuse, excessive use, accident, neglect, improper maintenance, alterations, or unless the unit has been operated and maintained in accordance with the instructions furnished.

This warranty will not apply where the unit has been used commercially or when the unit has been used in conjunction with accessories not manufactured by **DENTRON RADIO CO.**

All implied warranties are limited in duration to ninety (90) days from the date of original retail purchase.

The provisions of this warranty specifically exclude any warranty or remedies for incidental or consequential damages.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

In order to obtain warranty service, send written notification to the following address: **DENTRON RADIO CO.**, Attn: Service Dept., 2100 Enterprise Parkway, Twinsburg, Ohio 44087.

Any written notification should include the model number of the unit, date and place of purchase, and a description of the defective part or condition. Do not return the unit or any parts unless requested to do so by **DENTRON RADIO CO.**

Although the return of the DENTRON Warranty Registration Card is not a condition precedent to warranty coverage and performance, the purchaser is encouraged to promptly return the Warranty Registration Card upon purchase in order to more easily facilitate the handling of any future service under these warranty provisions.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

DenTron
Radio Co., Inc.

2100 Enterprise Parkway
Twinsburg, Ohio 44087
(216) 425-3173

Operating Manual

160-10 AT/1kw

Super Tuner

DenTron

DenTron 160-10 Super Tuner
1kw

The DenTron 160-10 AT Antenna Tuner (Transmatch), will couple a 160 - 10 meter Transmitter to almost any type antenna system.

The 160-10 AT, when properly adjusted, will tune out load reactance, and transform the load impedance to 50 - 70 ohms.

The 160-10 AT also includes a highly efficient balun, so antennas fed with open-wire line may be properly tuned to desired frequency.

The 160-10 AT may be used with coax-fed antennas as well as end-fed single wire types.

Installation

1. Hook ground wire on back of tuner.
   a. A good ground is very important when using end-fed wire antennas.

2. From the rear panel marked "transmitter," connect a coax cable to an SWR bridge or preferably the DenTron W-2 Wattmeter that is connected to the station transceiver.

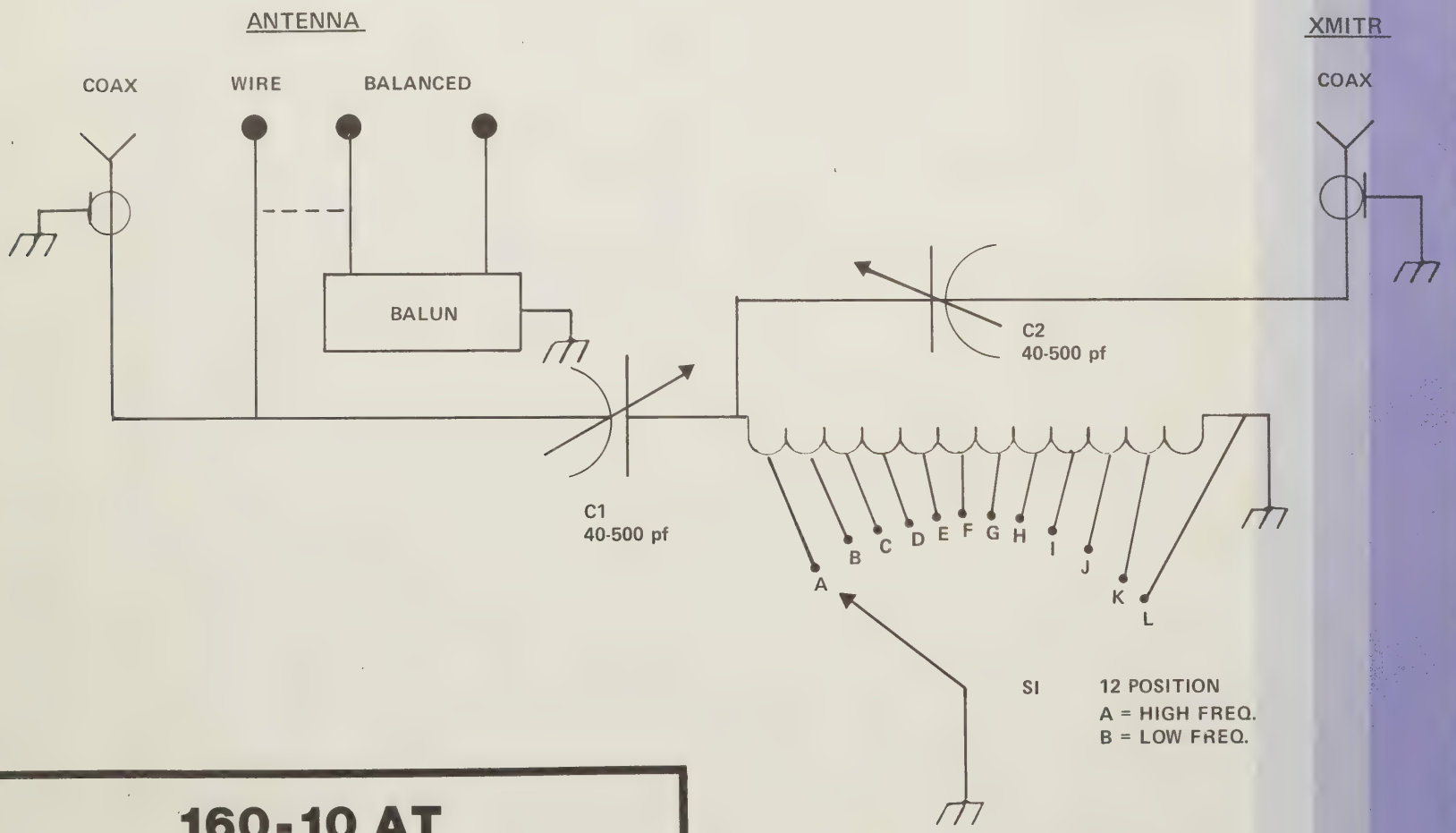
3. ANTENNA CONNECTIONS:
   a. Coax fed antennas to coax feedline.
   b. End-fed wire to SINGLE WIRE TERMINAL.
   c. OPEN WIRE FEED to BALANCED FEED LINE TERMINALS and also JUMPER WIRE to SINGLE WIRE TERMINAL (dotted line).

   PLEASE NOTE: If experiencing difficulty when tuning a random wire for 160M, place a jumper wire across terminals, as indicated by dotted line on the back of tuner. **CAUTION:** Remove this jumper wire for other frequency on single wire.

Operation

1. Set "Transmitter Matching" and "Antenna Matching" Controls to "5".
2. Listen on receiver for maximum band noise while turning inductance control for maximum noise.

   (A is highest frequency, L is lowest frequency)
3. Feed enough power through the system to get a reading on the SWR bridge or wattmeter in the reflected position.
4. Rotate Inductance Control for a drop in SWR reflected reading.
5. Adjust "Transmitter Matching" and "Antenna Matching" control for minimum SWR.
6. Now apply full power and touch up "Transmitter Matching" control if necessary.



160-10 AT

BASIC CONTROL SETTINGS

(into a 50 ohm resistive load)

BAND & FREQ.	TRANS.	INDUCTANCE	ANT.
160- 1.830	1	L	2.5
75- 3.8	3	E	4
40- 7.2	5.5	C	6
20- 14.2	4	B	1
15- 21.3	3.5	B	3
10- 28.6	8.25	A	8

SUPERTUNER IN BASIC SYSTEM

DenTron

Limited Warranty

DenTron Radio is proud of the quality and workmanship of its communication equipment. If properly installed and operated in accordance with our instruction manual, it will give reliable performance. DenTron Radio extends to you as an owner of a new DenTron Radio Product the warranty set forth below:

For ninety (90) days from the date of original retail purchase, **DENTRON RADIO CO.** will either repair or replace, at its option, free of charge, any part or parts found to be defective in material or workmanship. Transportation charges for any parts submitted for replacement under this warranty must be paid by the purchaser.

This warranty will not apply to any part which has become inoperative due to misuse, excessive use, accident, neglect, improper maintenance, alterations, or unless the unit has been operated and maintained in accordance with the instructions furnished.

This warranty will not apply where the unit has been used commercially or when the unit has been used in conjunction with accessories not manufactured by **DENTRON RADIO CO.**

All implied warranties are limited in duration to ninety (90) days from the date of original retail purchase.

The provisions of this warranty specifically exclude any warranty or remedies for incidental or consequential damages.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

In order to obtain warranty service, send written notification to the following address: **DENTRON RADIO CO.**, Attn: Service Dept., 2100 Enterprise Parkway, Twinsburg, Ohio 44087.

Any written notification should include the model number of the unit, date and place of purchase, and a description of the defective part or condition. Do not return the unit or any parts unless requested to do so by **DENTRON RADIO CO.**

Although the return of the DENTRON Warranty Registration Card is not a condition precedent to warranty coverage and performance, the purchaser is encouraged to promptly return the Warranty Registration Card upon purchase in order to more easily facilitate the handling of any future service under these warranty provisions.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

DenTron
Radio Co., Inc.

2100 Enterprise Parkway
Twinsburg, Ohio 44087
(216) 425-3173

DenTron 160-10 Super Tuner
1kw

The DenTron 160-10 AT Antenna Tuner (Transmatch), will couple a 160 - 10 meter Transmitter to almost any type antenna system.

The 160-10 AT, when properly adjusted, will tune out load reactance, and transform the load impedance to 50 - 70 ohms.

The 160-10 AT also includes a highly efficient balun, so antennas fed with open-wire line may be properly tuned to desired frequency.

The 160-10 AT may be used with coax-fed antennas as well as end-fed single wire types.

Installation

1. Hook ground wire on back of tuner.
   a. A good ground is very important when using end-fed wire antennas.

2. From the rear panel marked "transmitter," connect a coax cable to an SWR bridge or preferably the DenTron W-2 Wattmeter that is connected to the station transceiver.

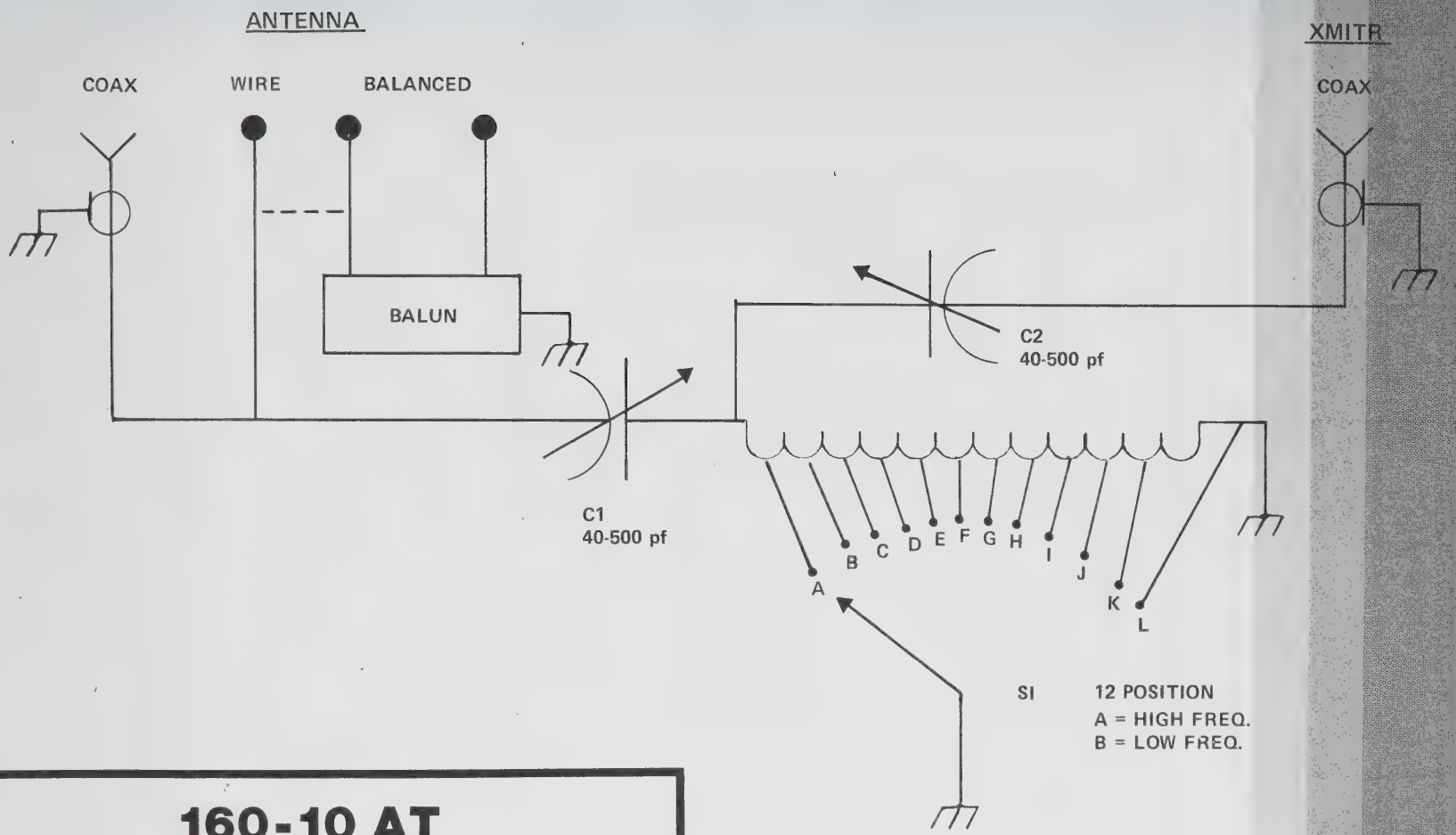
3. ANTENNA CONNECTIONS:
   a. Coax fed antennas to coax feedline.
   b. End-fed wire to SINGLE WIRE TERMINAL.
   c. OPEN WIRE FEED to BALANCED FEED LINE TERMINALS and also JUMPER WIRE to SINGLE WIRE TERMINAL (dotted line).

   PLEASE NOTE: If experiencing difficulty when tuning a random wire for 160M, place a jumper wire across terminals, as indicated by dotted line on the back of tuner. **CAUTION:** Remove this jumper wire for other frequency on single wire.

Operation

1. Set "Transmitter Matching" and "Antenna Matching" Controls to "5".
2. Listen on receiver for maximum band noise while turning inductance control for maximum noise.

   (A is highest frequency, L is lowest frequency)
3. Feed enough power through the system to get a reading on the SWR bridge or wattmeter in the reflected position.
4. Rotate Inductance Control for a drop in SWR reflected reading.
5. Adjust "Transmitter Matching" and "Antenna Matching" control for minimum SWR.
6. Now apply full power and touch up "Transmitter Matching" control if necessary.



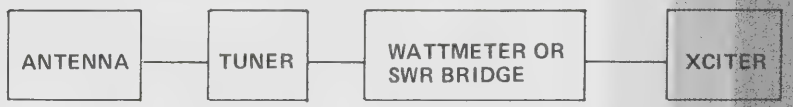
160-10 AT

BASIC CONTROL SETTINGS

(into a 50 ohm resistive load)

BAND & FREQ.	TRANS.	INDUCTANCE	ANT.
160- 1.830	1	L	2.5
75- 3.8	3	E	4
40- 7.2	5.5	C	6
20- 14.2	4	B	1
15- 21.3	3.5	B	3
10- 28.6	8.25	A	8

SUPERTUNER IN BASIC SYSTEM



DenTron

DenTron 160-10 Super Tuner
1kw

The DenTron 160-10 AT Antenna Tuner (Transmatch), will couple a 160 - 10 meter Transmitter to almost any type antenna system.

The 160-10 AT, when properly adjusted, will tune out load reactance, and transform the load impedance to 50 - 70 ohms.

The 160-10 AT also includes a highly efficient balun, so antennas fed with open-wire line may be properly tuned to desired frequency.

The 160-10 AT may be used with coax-fed antennas as well as end-fed single wire types.

Installation

1. Hook ground wire on back of tuner.
   a. A good ground is very important when using end-fed wire antennas.

2. From the rear panel marked "transmitter," connect a coax cable to an SWR bridge or preferably the DenTron W-2 Wattmeter that is connected to the station transceiver.

3. ANTENNA CONNECTIONS:
   a. Coax fed antennas to coax feedline.
   b. End-fed wire to SINGLE WIRE TERMINAL.
   c. OPEN WIRE FEED to BALANCED FEED LINE TERMINALS and also JUMPER WIRE to SINGLE WIRE TERMINAL (dotted line).

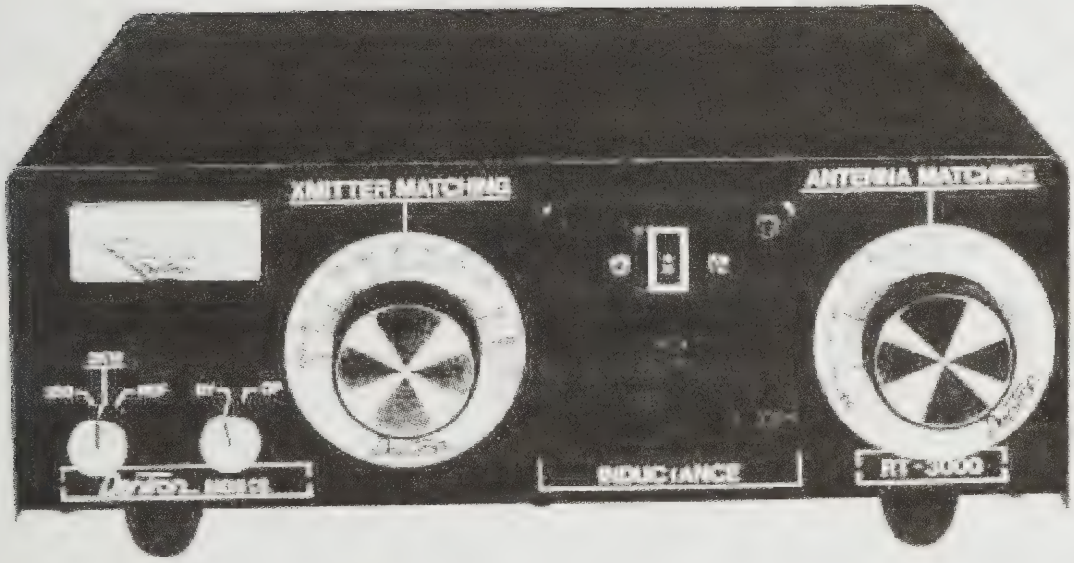
   PLEASE NOTE: If experiencing difficulty when tuning a random wire for 160M, place a jumper wire across terminals, as indicated by dotted line on the back of tuner. **CAUTION:** Remove this jumper wire for other frequency on single wire.

Operation

1. Set "Transmitter Matching" and "Antenna Matching" Controls to "5".
2. Listen on receiver for maximum band noise while turning inductance control for maximum noise.

   (A is highest frequency, L is lowest frequency)
3. Feed enough power through the system to get a reading on the SWR bridge or wattmeter in the reflected position.
4. Rotate Inductance Control for a drop in SWR reflected reading.
5. Adjust "Transmitter Matching" and "Antenna Matching" control for minimum SWR.
6. Now apply full power and touch up "Transmitter Matching" control if necessary.

Operating Manual
RT-3000 Antenna Tuner


XMITTER MATCHING
ANTENNA MATCHING
INDUCTANCE

Description

The model RT-3000 antenna tuner is a slim, compact, high performance unit with the most asked for features built-in to provide the operator with the latest design developments and ease of operations.

The RT-3000 is equipped with an in-line wattmeter, with front panel selectable ranges for 200 watts or 2000 watts forward and 200 watts reflected, 6:1 vernier control on transmitter and antenna matching, and a roller inductor with integral turns counter. This adds up to an antenna tuner to handle innumerable systems with utmost precision.

The RT-3000's low profile, modular design, makes it a most appealing addition to any HF communications station.

Specifications

Frequency Coverage:	1.8 - 30 MHz continuous
Input Impedance:	50 Ohms
Output Impedance:	Coax - 50 Ohms Nominal
	Wire - High or Low Z - Balance Feed Line with optional BL-1 Balun
Power Capability:	3000 watts P.E.P.
Dimensions:	4" (h) x 12" (w) x 13" (d)
Weight:	10 lbs.

Front panel controls are provided for transmitter matching, antenna matching (Vernier controlled), inductance (turns counter provided), bypass operate selector and wattmeter selector.

Warning

Do not apply more than 100 watts to the RT-3000 prior to tuning. Always tune with low power levels before increasing power level to maximum.

Installation

Unpacking

Carefully remove the RT-3000 from the shipping carton and examine it for evidence of damage. Immediately notify the shipping company should any damage be found.

Location

The RT-3000 will work properly in almost any location. Select a location on the operating table that will allow easy access to the control knobs.

Connections

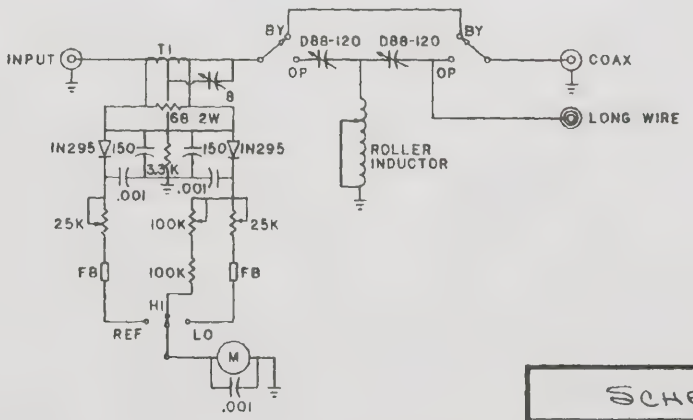
Connect the RF output of your exciter to the transmitter connector of the RT-3000, using 50 ohm coaxial cable such as RG8/U. Connect the coaxial line of your antenna to coax connector, or connect a long wire antenna to post marked Long Wire. Also, connect a good ground to GND post.

You now have a choice of using the tuner or bypassing the coax position. Both coax and long wire cannot be used at the same time.

Operation

1. Set transmitter matching and antenna matching controls to number 50.
2. Listen on receiver for maximum band noise while turning roller inductor for maximum noise. Caution: Do not turn counter below 00.00 or exceed 36.0 or serious damage may result to the roller inductor.
3. Apply enough power to the system to get a reading on the meter in the reflected position.
4. Rotate the roller inductor for a drop in reflected power reading.
5. Adjust "transmitter matching" and "antenna matching" controls for a minimum reading of reflected power.

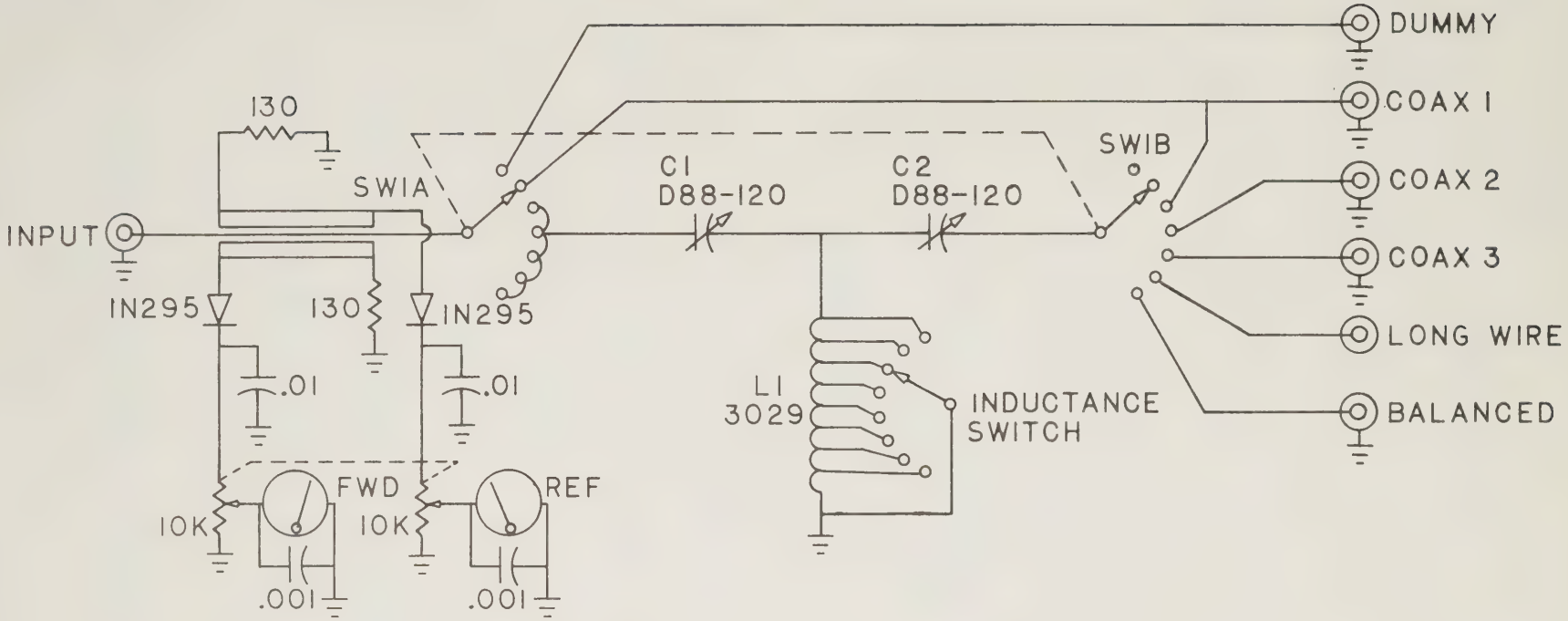
RT3000 SCHEMATIC



SCHEMATIC		
SCALE ——	APPROVED BY	DRAWN BY CD
DATE 3-25-80		REVISED
Denton RADIO CO.		
RT-3000		DRAWING NUMBER 25-007

AT-3K Tuner

Operating Manual



AT-3K SCHEMATIC

Operation

1. Switch Antenna Selector to "Dummy Load" and tune up the exciter into a 50 ohm Dummy Load; this will preset the exciter controls for a 50 ohm resistive load. Then switch to the proper antenna to be used.

2. Set "Transmitter Matching" and "Antenna Matching" controls to position 5.

3. Listen on receiver for maximum band noise while turning inductance selector for maximum noise.

4. Feed enough power through the system to get a reading on the reflected meter with the sensitivity control set fully clockwise.

5. Rotate inductance control for a drop on this reading.

6. Adjust "Transmitter Matching" and "Antenna Matching" controls for a minimum reading on the reflected meter.

7. After tuning up, rotate the set control to the set line on the Relative Power meter. The SWR will be calculated automatically.

Parts List

C_1, C_2	120 Pf Variable
L_1	Primary Coil

Installation

Unpacking

Carefully remove the AT-3K from the shipping carton and examine it for evidence of damage. Immediately notify the shipping company should any damage be found.

Location

The AT-3K will work properly in almost any location. Select a location on the operating table that will allow easy access to the control knobs.

Connections

Connect the RF Output of your transmitter to the input connector of the AT-3K, using 50 ohm coaxial cable such as RG-8/U. Connect the coaxial line of your antenna to COAX 1 connector. Connect another coaxial line of a second antenna to COAX 2 connector. A third coax antenna can be connected to COAX 3 connector. Connect a long wire antenna to post marked LONG WIRE. Also connect a good ground to GND post.
Connect coaxial line to connector marked BALANCE. Connect a coaxial line from Dummy Load to a DenTron Big Dummy. You now have a choice of five antennas and a dummy load which you switch from the front panel. You can also, from the front panel, bypass the AT-3K on COAX 1 and Dummy Load.

Description

The Model AT-3K Antenna Tuner is a precision-built, compact, high performance instrument of advanced design, providing maximum possible flexibility for the operator.

The AT-3K is equipped with an in-line relative power SWR meter showing simultaneously forward and reverse power on two separate precision meters, with front panel sensitivity control for SWR calculation.

The AT-3K has been designed to match any transmitter (3000 watts P.E.P maximum) to a multitude of antenna systems, including three coaxial lines, a long wire system, and a balanced feed line with optional balun. There is also a switch position for a Dummy Load such as a DenTron Big Dummy, which can be used to tune up without on-air interference. The AT-3K will tune any of these systems from 1.8-30 MHz and it will handle a full 3kw P.E.P. Built modularly, the AT-3K makes the ideal addition to any HF communication system operating between 1.8-30 MHz.

AT-3K Specifications

Frequency Coverage: 1.8-30 MHz Continuous
Input Impedance: 50 ohms (Resistive)
Output Impedance:

Coax 1	50 ohms nominal	
Coax 2	50 ohms nominal	May range from a few ohms to a high impedance.
Coax 3	50 ohms nominal	

Long Wire either High or Low Impedance
Balanced Line 75 to 600 ohms (with optinal Balun) feed line impedance
Power Capability: 3000 watts P.E.P.
Dimensions: 4" high, 12" wide, 13½" deep
Weight: 12 lbs.
Front panel controls are provided for the adjustment of transmitter matching, antenna matching, inductance selector, antenna selector and meter sensitivity.

Warning

Do not put more than 100 watts into the AT-3K prior to tuning. Always tune with small powers. Only after tuning increase driver gain to maximum output. Do not use inductance selector or antenna selector with power applied to the AT-3K.

Operating Manual
AT-1K Tuner

Limited 90 Day Warranty

DenTron Radio is proud of the quality and workmanship of its communication equipment. If properly installed and operated in accordance with our instruction manual, it will give reliable performance. DenTron Radio extends to you as an owner of a new DenTron Radio Product the warranty set forth below:

For ninety (90) days from the date of original retail purchase, **DENTRON RADIO CO.** will either repair or replace, at its option, free of charge, any part or parts found to be defective in material or workmanship. Transportation charges for any parts submitted for replacement under this warranty must be paid by the purchaser.

This warranty will not apply to any part which has become inoperative due to misuse, excessive use, accident, neglect, improper maintenance, alterations, or unless the unit has been operated and maintained in accordance with the instructions furnished.

This warranty will not apply where the unit has been used commercially or when the unit has been used in conjunction with accessories not manufactured by **DENTRON RADIO CO.**

All implied warranties are limited in duration to ninety (90) days from the date of original retail purchase.

The provisions of this warranty specifically exclude any warranty or remedies for incidental or consequential damages.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

In order to obtain warranty service, send written notification to the following address: **DENTRON RADIO CO.,** Attn: Service Dept., 1605 Commerce Drive, Stow, Ohio 44224.

Any written notification should include the model number of the unit, date and place of purchase, and a description of the defective part or condition. Do not return the unit or any parts unless requested to do so by **DENTRON RADIO CO.**

Although the return of the DENTRON Warranty Registration Card is not a condition precedent to warranty coverage and performance, the purchaser is encouraged to promptly return the Warranty Registration Card upon purchase in order to more easily facilitate the handling of any future service under these warranty provisions.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

DenTron®
Radio Co., Inc.
1605 Commerce Drive
Stow, Ohio 44224

AT-3K Tuner
Operating Manual

DenTron®

Lets You Be Heard Around The World


radio handbook
Antenna Engineering Handbook
General Electronics Circuits
THE INTEGRATED CIRCUIT DATA BOOK
THE RADIO AMATEUR'S HANDBOOK
1972
TUNE
LOAD
PWR
MATCHING
MF-2002A
HF-ACS
HF-200A
HF-AVS
AF-1A
DenTron
Radio Co., Inc

Dear Fellow Amateur,

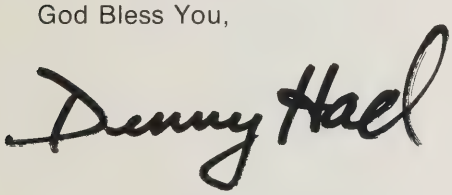
Thank you for considering the purchase of our products. We take pride in design and workmanship, and know this is a major contributing factor for our customer loyalty.

I would like to share with you my excitement about our newest product, the HF-200A, a completely solid state amateur HF transceiver. This radio has been in development for over 2½ years. Although the length of this time span has been frustrating, I feel the performance and quality of this radio will prove to be well worth the initial time devoted to its research and development.

I have been an active ham since 1958, and have probably owned and operated just about every radio produced. I pride myself on staying abreast of the desires, wants and needs of the amateur community. It is through this experience, and also my involvement in FCC and WARC activities that I know the HF-200A is a most desirable transceiver, offering its owner endless hours of enjoyment.

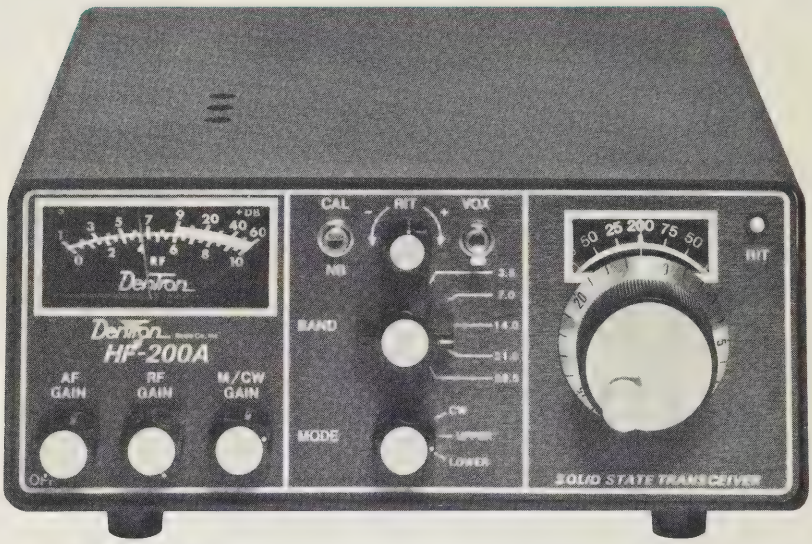
The unprecedented growth of DenTron Radio is by the grace of God and His divine guidance. I thank the Lord for the gift He has given me and publicly state — to those who trust in the Lord all things are possible.

God Bless You,



Denny Had — K8KXK
President
DenTron Radio Co., Inc.

HF-200A™ Transceiver



The DenTron HF-200A is a 5 band 80 through 10 meter completely solid state 200 watt transceiver. The solid state circuitry utilizes modular construction. The output signal will provide quality, world wide communications from a fixed, portable or mobile installation. *Be heard round the world with a complete DenTron amateur radio station!*

Specifications:

General:

- Frequency coverage:
  3.450 MHz - 4.050 MHz
  6.950 MHz - 7.550 MHz
  13.950 MHz - 14.550 MHz
  20.950 MHz - 21.550 MHz
  28.000 MHz - 30.000 MHz
  *28.500 MHz - 29.000 MHz
  *standard from factory (crystals available for entire range)
- Modes of operation: USB, LSB, CW, RTTY, SSTV
- Frequency stability: PTO; total drift is less than 100 Hz after warm up. Total frequency change is less than 100 Hz over 11 - 16 V-dc input supply change.
- Frequency readout accuracy: better than ± 4 KHz between 100 KHz calibration points.
- Power supply requirements:
  13.6V nominal
  13.6V-dc regulated 2A
  13.6V-dc unregulated 20A
  750MA receive-full audio
  16A transmit
- Weight: 11 pounds
- Size: H 4" W 10" D 15" including heat sink extrusion

Receiver:

- Sensitivity: less than 0.25μV for 10dB S/N
- Intermodulation: intercept point + 20dBm
- Selectivity: 2.4KHz at -6dB and 4.4KHz at -60dB (2.0:1 shape factor)
- Ultimate selectivity: greater than 100dB
- Agc: I-F and A-F derived — less than 4dB output variation for 80dB input signal change 191 milliseconds rise time, 3.285 second delay time.
- I-F frequency: 9 MHz
- Image and I-F rejection: greater than 50dB
- Spurious response: greater than 60dB down
- Audio output: 1 watt 8 ohm load

Transmitter:

- Power input:
  SSB - 200 watts PEP
  CW - 200 watts
  RTTY and SSTV - 100 watts
- Load impedance: 50 ohms, nominal
- Spurious output: greater than 50dB down
- Harmonic output: greater than 40dB down
- IMD: 30dB below PEP
- Carrier suppression: greater than 50dB
- Undesired sideband suppression: greater than 50dB @ 1KHz
- Microphone input: low impedance — dynamic
- CW keying: requires a closed circuit to ground
- VSWR: no internal shut down of power amplifier at any SWR ratio. Recommend 2:1 SWR maximum for continuous operation.

DTR-2000L™ Amplifier

The ultimate in precision linear amplifiers from DenTron. Features range from a broadcast proven 8877 tube with the maximum gain and plate dissipation allowed in the amateur service, to a continuous duty built-in power supply with a vacuum impregnated power transformer. Cooling is EIMAC specification forced air, through a pressurized chimney and chamber. Dual metering is provided for plate voltage and current monitoring, along with front panel switching of transformer secondary taps and linear bypass. Compatible with most exciters the DTR-2000L was designed within a series of amateur linear amplifiers spawned by the MLA-2500. These amplifiers have been tested and proven in every imaginable situation folks could put them through; from rare DXpeditions to medical research labs, not to mention hamshacks the world over.

Specifications:

- Frequency range:
  160 meter band 1.8 - 2.5 MHz
  80 meter band 3.45 - 4.6 MHz
  40 meter band 6.00 - 9.0 MHz
  20 meter band 11.00 - 16.00 MHz
  15 meter band 20.95 - 23.5 MHz
- The DTR-2000L will cover most MARS frequencies just outside the amateur bands. (With proper coil tap changes and band switch modification, the unit will also cover the 10 meter amateur band.)
- Modes: USB, LSB, CW RTTY, SSTV
- Power requirements: 234/117 VAC 50/60 Hz
- RF drive power: 125 watts maximum, and 65 watts RMS minimum for 1 KW DC input.
- DC plate voltage: SSB (idle + 2600V approx.) CW (idle + 1800 V approx.)
- Duty cycle: 100%
- Input impedance: 50 ohms nominal
- Input VSWR: 1.5 to 1 average
- Output impedance: 50 ohms nominal
- Antenna load VSWR: 3 to 1 max.
- ALC: negative going, adjustable from rear panel
- Spurious emissions: IMD greater than 30 dB down, harmonics greater than 40 dB down.
- FCC type accepted
- Weight: (including 8877) 54 pounds
- Size: H 7¼″ W 14½″ D 14½″

MLA-2500B™ Amplifier

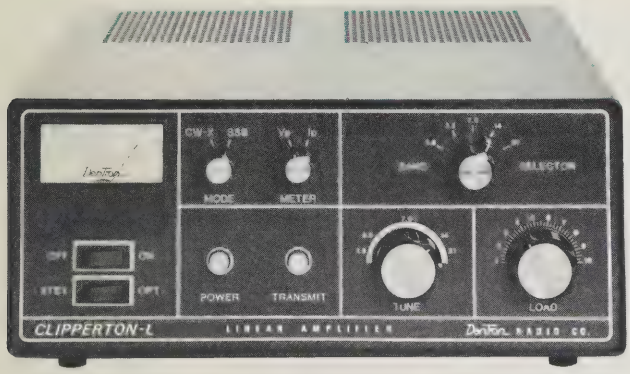
Contest proven on the 1978 Clipperton Island DXpedition!!

The world famous MLA-2500 is now the MLA-2500B. It features the same EIMAC 8875 work-horse finals, self-contained continuous duty power supply, full complement metering and controls from the front panel, plus **NEW HIGH-LOW POWER SWITCHING** for consistent efficiency at both the 1KW and 2KW power levels. The basic MLA2500 remains the same unit that thousands of amateurs now have in use the world over; a cool-running full-power linear amplifier of high quality, all-American construction and design. Shouldn't you be using the no-compromise linear that powered the Clipperton DXpedition?

Specifications:

- Frequency range:
  160 meter band 1.8 - 2.5 MHz
  80 meter band 3.5 - 4.2 MHz
  40 meter band 6.8 - 8.0 MHz
  20 meter band 13.5 - 15.0 MHz
  15 meter band 20.0 - 22.0 MHz
- NEW FEATURE: Hi-Lo power switching
- 2000 watts PEP input on SSB
- 1000 watts DC input on CW, RTTY, of SSTV continuous duty
- Variable forced air cooling system
- Self contained continuous duty power supply 2250V idle SSB — 1575V idle CW approx.
- Two EIMAC 8875 external anode ceramic, metal triodes operating in grounded grid.
- Covers most MARS frequencies just outside ham bands.
- 50 ohm input impedance: 1.5 to 1 VSWR average
- Harmonic suppression: meets or exceeds FCC requirements
- Built-in ALC (negative going)
- Built in RF wattmeter
- Easily changed 117V or 234V AC 50-60 Hz
- Third order distortion down better than 35 dB
- 65 watts minimum drive for 1 KW DC input
- Rack mounting kit available (standard 19″ rack)
- FCC type accepted
- Weight: 47 pounds
- Size: H 5½″ W 14″ D 14″

Clipperton-L™ Amplifier



Amateur Radio has been a part of man's greatest modern adventures, like ballooning the Atlantic . . . or operating from Clipperton Island in the Pacific. Adventure is a part of hamming, and DenTron's new Clipperton L is dedicated to that spirit.

Specifications:

- **NEW FEATURE:** HI-LO power switching
- 160 thru 15 meters
- 2000 watts PEP input on SSB
- 1000 watts DC input on CW, RTTY, or SSTV
- Forced air cooling
- Self contained continuous duty power supply
- 2500 V idle SSB — 1800 V idle CW approx.
- 4-572 B triodes operating in grounded grid
- Covers most MARS frequencies just outside ham bands
- 50 ohm input impedance unbalanced at 1.5 to 1 VSWR average.
- 50 ohm output impedance
- Harmonic suppression: meets or exceeds FCC requirements
- Built-in ALC (adjustable)
- Easily changed 117V or 234V AC 50-60 Hz
- Meter illuminated for plate voltage or current
- FCC type accepted
- Weight: 42 pounds
- Size: H 6″ W 14½″ D 14½″

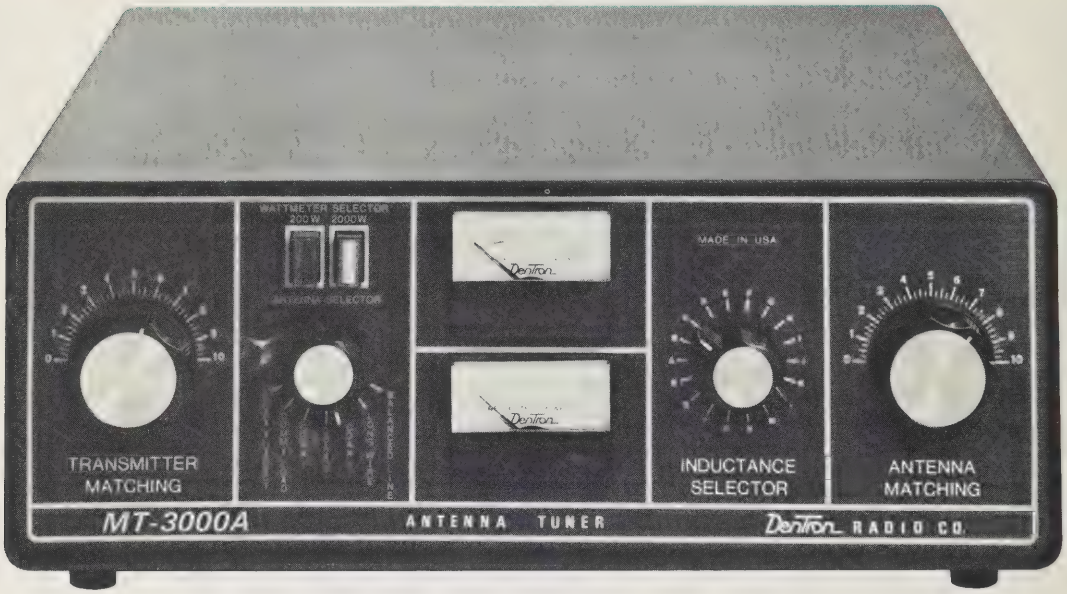
GLA-1000™ Amplifier

The GLA-1000 is the smallest and most economical amateur linear to offer 1200 watts SSB PEP input, and 1000 watts CW input, with a built-in power supply. The GLA was in development for more than a year and then field tested by a group of amateurs across the country. According to their suggestions, it was refined to become the Great Little Amp you asked for!

Specifications:

- Frequency Coverage:
  80 meters — 3.45 to 4.3 MHz
  40 meters — 6.95 to 7.5 MHz
  20 meters — 13.95 to 14.5 MHz
  15 meters — 20.95 to 24.35 MHz
  10 meters — with modification by licensed amateur (Covers most MARS frequencies just outside the amateur bands.)
- Electrical power consumption:
  117 VAC 50/60 Hz 12.5 amps
  Factory fused at 15 amps
  234 VAC 50/60 Hz 7 amps
  Recommended fuse 10 amps
- RF drive: maximum 125 watts
- DC input: 1 KW CW and 1200 watts PEP SSB
- Spurious emissions:
  Ind better than 30 dB
  Harmonics down better than 40 dB
- Components:
  4, D-50A tubes (6LQ6)
  6, diodes
- FCC type accepted
- Weight: 24 pounds
- Size: H 5⅜″ W 11″ D 11″

MT-3000A™ Tuner



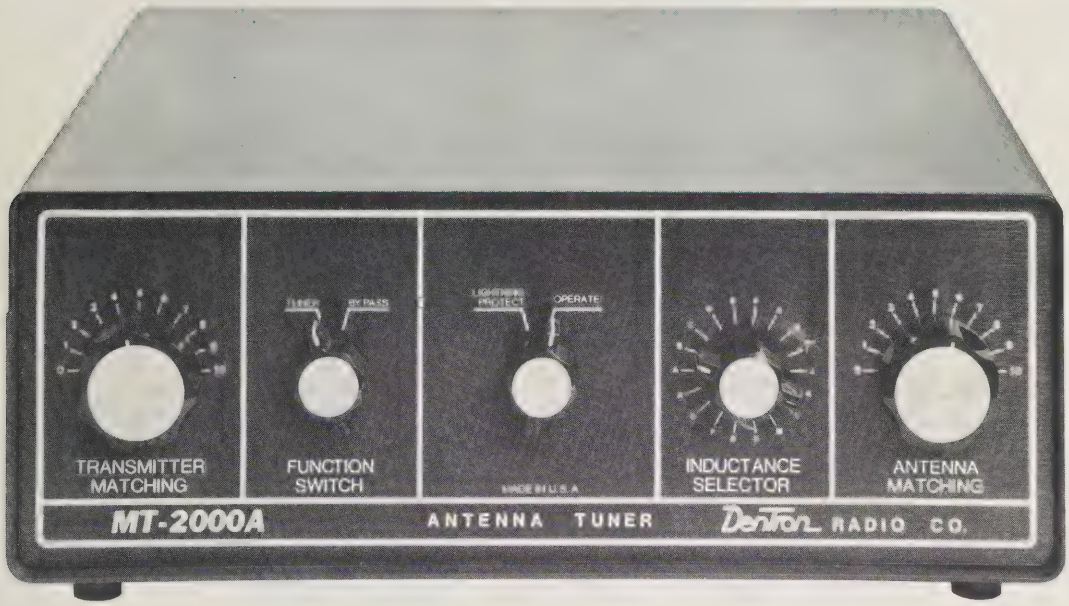
Contest proven on the 1978 Clipperton Island DXpedition!!

Years of designing and manufacturing fine antenna tuners has led DenTron Radio to the "ultimate tuner", the MT-3000A. Featuring the same reliability and value of our other tuners, the MT-3000A does more than tune coax, random wire, and balanced feed systems. There is a built-in antenna selector switch for selecting five different antennas — three coax lines, balanced feed, and random wire. A coax direct position allows direct feed of a designated coax antenna. Plus another position lets you tune your station off-air, through a 250 watt dummy load. The dummy load is fused to prevent damage due to excessive power, of course. Dual in-line forward and reflected wattmeters provide continuous monitoring of both power output and antenna tuning. The wattmeter system of the new MT-3000A is switchable between 200 and 2000 watts, using dual color-keyed push button switches. The MT-3000A offers continuous tuning from 160 through 10 meters, with power handling capability in excess of 3 KW PEP. And our newest tuner is styled to match our MLA-2500B linear amplifier, the no compromise favorite of Amateurs everywhere. All this, plus the pride of American craftsmanship and ingenuity that's built into every DenTron product.

Specifications:

- Continuous tuning 1.8 -30 MHz
- Power handling capability in excess of 3 KW PEP
- Front panel antenna switch with 5 antenna inputs plus tuner bypass position
- Built-in 50 ohm — 250 watt dummy load
- Ceramic inductance switch 12 amp capacity
- 2 tapped inductors, # 12 gauge & #8 gauge
- Balance line tuning — 70 - 660 ohm feed line
- Dual wattmeters
- 3 core heavy-duty balun
- Weight: 18 pounds
- Size: H 5¼" W 14" D 14"

MT-2000A™ Tuner



In the same spirit as the revolutionary DenTron MT-3000A comes the new DenTron MT-2000A antenna tuner, an economical full power tuner designed to handle virtually any type of antenna, whether it be a vertical, beam, quad, dipole, or long wire.

The sleek styling and low profile of the MT-2000A is certainly beautiful, but be assured that isn't all you're buying. The MT-2000A is designed and engineered using heavy duty all-metal cabinetry and high quality American components throughout.

When you consider the MT-2000A's unique features — front panel coax bypass switching, front panel lightning protection antenna grounding switch, 3 KW PEP handling capability and built-in 3 core balun for balanced feed line, we're sure you'll decide to buy American and stay with DenTron.

Specifications:

- Continuous, tuning 1.8 to 30 MHz
- Front panel grounding switch for your antenna system
- Front panel bypass switching
- Antenna inputs:
  coax unbalanced, SO-239
  random wire, ceramic feedthru
  balanced line, two ceramic feedthrus, tuned feeders 70-660 ohms
  2 tapped inductors, #12 gauge wire & #8 gauge wire
- Handles a full 3KW PEP
- Transmatch circuit: tune out load reactance, transform load impedance to 50-75 ohms
- Built-in heavy duty 4 to 1 balun, 3 cores
- Harmonic attenuation
- Ceramic 18 position rotary switch, 12 amp capacity
- Capacitor spacing 6000 volt
- Weight: 16 pounds
- Size: H 5¼″ W 14″ D 14″

Super Tuner Plus™

The famous Super Tuner that helped make your hobby more fun has been improved! We added a relative forward power meter for tune-ups without a wattmeter. The Super Tuner Plus will transform just about any antenna impedance to 50 ohms. DenTron's Super Tuner Plus sets the standard by which other tuners are measured.

Specifications:

- Selectable antenna functions handles four different antennas.
- Alternate output: straight through for use with second antenna system or dummy load, etc.
- Bypass: for use with coax when VSWR is low and tuner is not needed.
- Coax tune: for use with coax when VSWR is high and needs to be tuned out, (50 to 75 ohm coax.)
- Single wire: for matching almost any configuration of random wire.
- Balanced: for matching almost any dipole using balanced feed and 70 to 600 ohm line.
- Relative output meter: gives a constant indication of the relative amplitude of your output signal when used in tuner position.
- 1000W CW and 1200W PEP SSB power handling capability, (DC input to amplifiers)
- Weight: 13 pounds
- Size: H 5½" W 10" D 11"

Jr. Monitor™ Tuner

Because you asked for it . . . we built it! The all-new Jr. MONITOR antenna tuner. Call it what you will — antenna tuner, transmatch matchbox, or matching network, the Jr. Monitor has it all wrapped up in one neat package.

With so many special features built in, think of the unlimited possibilities you'll have for experimenting with dozens of antennas! For instance, the DenTron All Band Doublet fed with balanced feed line hooked to the Jr. Monitor covers 1.8 - 30 MHz. Or try this mobile suggestion: 108" mobile whip fed with coax to the Jr. Monitor located under the dash will give you 10 - 40 meter mobile coverage and no coils to change!

Specifications:

- Continuous tuning 1.8 - 30 MHz
- Forward reading relative output power meter
- 300 watt power capability
- Built-in encapsulated balun
- Mobile mounting bracket
- Ceramic 12 position rotary switch
- Capacitor spacing 1000 volts

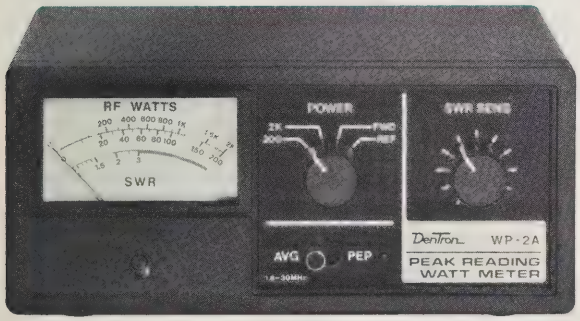
WP-1A Wattmeter

- Giant 3½″ meter calibrated for 20/200/2000 watts
- Covers 160-6 meters (1.8 - 60 MHz)
- Peak reading feature and hold function (locks on highest voice peak)
- SWR bridge
- Weight: 3½ pounds
- Size: H 4¾″ W 8″ D 6″

WVP-1A Wattmeter

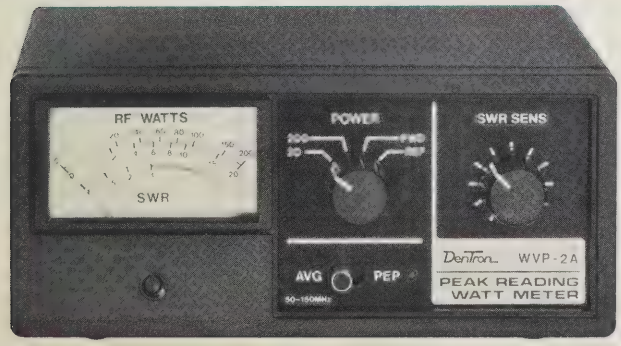
- Giant 3½″ meter calibrated for 20/200 watts
- Covers 50-160 MHz (6 & 2 meters)
- Peak reading feature and hold function (locks on highest voice peak)
- SWR bridge
- Weight: 3½ pounds
- Size: H 4¾″ W 8″ D 6″

WP-2A Wattmeter



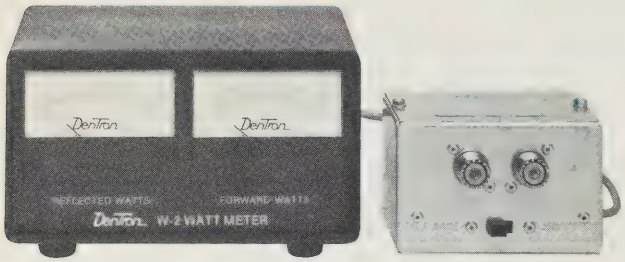
- 2½″ scale calibrated for 200/2000 watts
- Covers 160-6 meters (1.8 - 60 MHz)
- Peak reading feature
- SWR bridge
- Weight: 2½ pounds
- Size: H 3″ W 6¼″ D 4¾″

WVP-2A Wattmeter



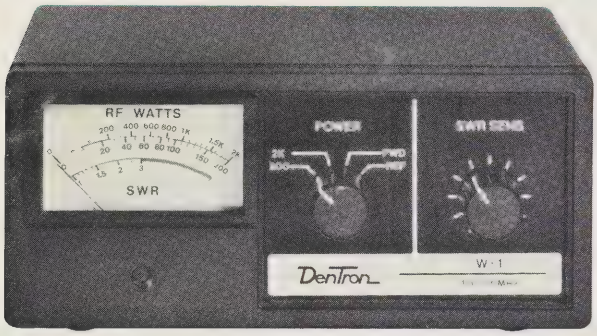
- 2½″ scale calibrated for 20/200 watts
- Covers 50-160 MHz (6 & 2 meters)
- Peak reading feature
- SWR bridge
- Weight: 2½ pounds
- Size: H 3″ W 6¼″ D 4¾″

W-2 Wattmeter



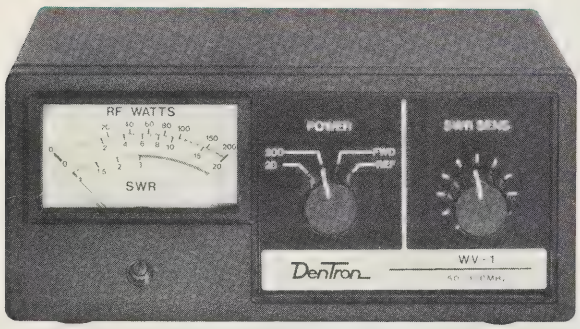
- Frequency range: 1.8 - 30 MHz
- Forward watt scale: 2000 or 200
- Reflected watt scale: 200 watts
- Low insertion loss
- Meter accuracy ±5%
- Sensor box may be extended 4 ft.
- Weight: 5 pounds
- Size: H 3½" W 7" D 6"
- Sensor box H 2½" W 4" D 2½"

W-1 Wattmeter



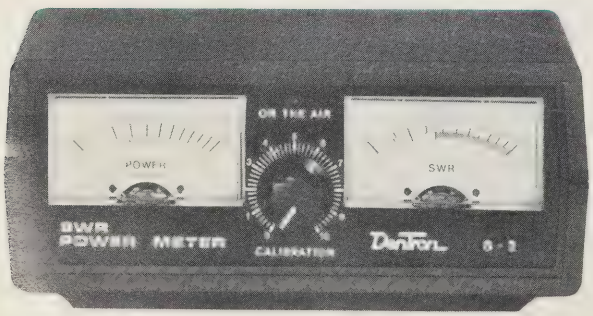
- 2½" scale calibrated for 200/2000 watts
- Covers 160-6 meters (1.8 - 60 MHz)
- SWR bridge
- Weight: 2 pounds
- Size: H 2¼" W 6¼" D 5"

WV-1 Wattmeter



- 2½" meter calibrated for 20/200 watts
- Covers 50 - 160 MHz (6 & 2 meters)
- SWR bridge
- Weight: 2 pounds
- Size: H 2¼" W 6¼" D 5"

S-2 Power Meter



- Full range SWR bridge/relative power meter
- 1¾" 12V DC illuminated meters
- Covers 160-2 meters (1.8-160 MHz)
- On-air indicator keyed by your RF power
- Weight: 1 pound
- Size: H 2½" W 5¾" D 3½"

F-1 Field Meter

- Super compact field strength meter with superior sensitivity
- Covers 1.8 - 150 MHz (160 & 2 meters)
- Complete with antenna
- Weight: ½ pound
- Size: H 2¼" W 3¼" D 3"

S-1 Bridge

- The SWR bridge
- Covers 1.8-150 MHz
- Compact for mobile or portable use
- Weight: ½ pound
- Size: H 2¼" W 3¼" D 3"

PS-20 VOM & Wattmeter

- Complete 20K per volt VOM that doubles as an RF wattmeter
- Large 4" meter calibrated for 20/200/1000 watts
- Directional coupler included
- Also handles SWR duties
- Weight: coupler box ¾ pounds — meter 1 pound
- Size: coupler box H 2¼" W 5¾" D 2¼"
  meter H 6" W 4" D 2¼"

PS-10 VOM & Wattmeter

- Complete 10K per volt VOM that doubles as an RF wattmeter
- 2½" meter calibrated for 20/200 watts
- Directional coupler included
- Also handles SWR duties
- Weight: coupler box ¾ pounds — meter ¼ pound
- Size: coupler box H 2¼" W 5¾" D 2¼"
  meter H 3¾" W 2⅜" D 1½"

AF-1A Audio Processor

The new AF-1A is a receiving audio processor, furnished with an AC power supply, superb flexibility, and modern styling. By simply hooking the AF-1A between your station speaker and receiver or transceiver, you will add new life to existing equipment. The secret is in the AF-1A's ability to mix passband, notch, and peak functions, plus its built-in 8 watt audio amplifier, designed to compensate for the normal loss of audio level due to processing. Weight: 3¼ pounds. Size: H 3¼" W 7¾" D 6¾".

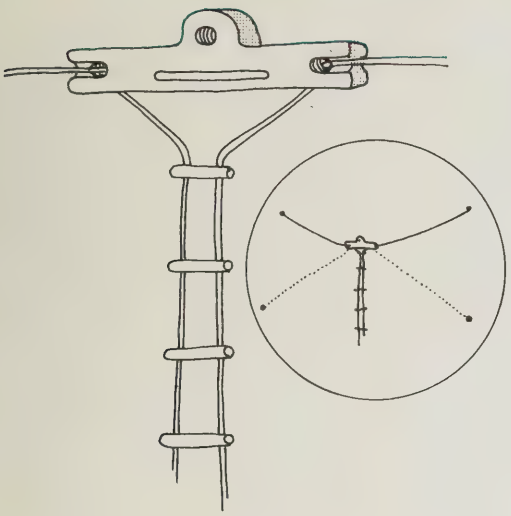
160 XV Transverter™

Make 160 meters only a step away from 80 with this remarkable DenTron 160 meter transverter. It is specifically designed to bring simple low cost 160 meter capability to any amateur station currently equipped for 80 meter CW, SSB, or AM operation. No modification of your existing equipment is required. Just "plug in and play" and you're on 160 meters with 100 watts transmit power and a super sensitive receiver.

Specifications:

- Full 1.8 - 2.0 MHz coverage
- Receiver sensitivity: .35 microvolts for 10 dB ratio
- 5 watts of drive ample for full input
- Built in power supply for 117 volt 50/60 Hz
- 6146B final tube
- Matches 50 - 70 ohm antenna
- Input drive overload protection (swamping circuit) 3.8 to 4.0 MHz input (75 meter band) SSB, CW, AM
- Printed circuit design
- Transverter bypass control circuit
- Weight: 18 pounds
- Size: H 6¼" W 12" D 10"

All Band Doublet™

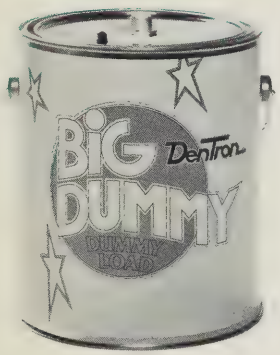


Contest proven on the 1978 Clipperton Island DXpedition!!

This is *THE* Antenna System — the perfect match for your DenTron antenna tuner! This versatile antenna provides for 160 through 10 meters, handles 2 KW PEP, and comes completely factory-assembled without any efficiency-robbing traps. Erect in any configuration (Inverted Vee, Flat Top, or Sloper), you may also trim, if necessary, to fit your lot — making sure to trim each leg equally. The ALL BAND DOUBLET is center-fed with PVC-covered 470-ohm balanced feedline (a DenTron exclusive) and is truly the solution to your multiband, limited space antenna needs. It is field-tested by the 1978 Clipperton DXpedition and used by Amateurs the world over!

Also available from your DenTron authorized dealer are 100-foot lengths of 470- and 300-ohm 1 KW balanced all-weather feedline.

Big Dummy™



Until now dummy loads were either super expensive, or exasperating exercises in futility . . . since the search for suitable cooling oil often led to a dead end. Now there is an economical alternative . . . the new DenTron Big Dummy. A full 1 KW dummy load, the Big Dummy offers a flat SWR, full frequency coverage from 1.8 to 30 MHz, and high grade industrial cooling oil furnished with the unit . . . no more frustrating searches, or substitutions! What's more, the DenTron Big Dummy is built to last . . . it comes fully assembled and warrantied. So join the Big Dummy club, help cut the QRM factor, and no one will call you a big dummy again!

Specifications:

- Power handling capabilities:
  1 KW continuous carrier — 10 minutes
  2 KW PEP (SSB) — 20 minutes
- Duty cycle: 50% (i.e. 10 min. on - 10 min. off)
- Cooling: 1 gallon, high quality, industrial grade, long life transformer oil
- Impedance: 50 ohms non-inductive
- VSWR: 0-30 MHz 1.05 to 1 or better
- Connector: standard SO-239
- Container: 1 gallon capacity, vented
- Shipping: 10 pounds, complete with 1 gallon of transformer oil
- Weight: 8½ pounds
- Size: H 7½" diameter 6⅝"

DenTron®

Radio Co., Inc.
2100 Enterprise Pkwy.
Twinsburg, Ohio 44087
(216) 425-3173

Operating Manual
JR. MONITOR

DenTron

Introduction

The JR. MONITOR Antenna Tuner is a sub-compact 300 watt capability antenna tuner of modern design. Its features offer the Amateur, SWL, or CBer the ultimate in operating flexibility. Virtually any type of antenna system can be used, whether it be COAX (50 or 75 ohm), balanced line (twin-lead), or random wire. The JR. MONITOR not only matches any type of feedline to a nominal 50 ohms, but is small enough to go absolutely anywhere from mobile to fixed to portable use. A mobile mounting bracket is included, and the unit is equipped with rubber feet to protect other equipment when stacking the JR. MONITOR. Another unique feature built into the unit is an RF sampling circuit and companion relative power output meter, front panel mounted. Using the relative power output meter greatly aids tuning, especially when an SWR bridge/power meter (such as the DenTron W-2) is unavailable. The frequency range of the JR. MONITOR tuner is 1.8 to 30 MHz, continuous. The JR. MONITOR was designed to be used with any exciter or transceiver producing up to 300 watts output. American-made components and all-metal construction of the unit combine for long life and trouble-free service.

Installation

The most essential component in any system utilizing a tuner is a good earth ground. A cold water pipe near the operating position, chassis ground in operating mobile, or a ground rod as near the station installation as possible are all suitable. Be certain to take your ground lead directly to the JR. MONITOR first, then to your transmitter, and finally to the remainder of your station equipment. If you are using a low pass filter for harmonic attenuation, be certain to place it as close to the input (SO-239 marked Transmitter) of the JR. MONITOR as possible. This will offer the filter device a pure 50 ohm load, and thus improve its efficiency. Using 50 ohm COAX (RG-8 or RG-58 or equivalent), connect your transmitter or transceiver to the transmitter input of the JR. MONITOR. As short a length of cable between units, as possible, is recommended. When using the JR. MONITOR with an SWR bridge/power meter (such as the DenTron W-2), insert the bridge between the tuner and transmitter.

Antennas can be connected to the JR. MONITOR in a variety of ways, depending on type of feedline employed. For COAX fed antennas, connect your antenna to the SO-239 connector marked COAX. For balanced (twin-lead) systems, connect one side of your feedline to either one of the balanced feed terminals, the other side of your feedline to the other balanced feed terminal.

NOTE: WHEN USING BALANCED FEED ANTENNA SYSTEMS, A JUMPER WIRE MUST BE INSTALLED BETWEEN ONE OF THE BALANCED FEED TERMINALS AND THE SINGLE WIRE TERMINAL. IF EXPERIENCING DIFFICULTY WHEN TUNING A RANDOM WIRE FOR 160 METERS, PLACE THE JUMPER ACROSS THE TERMINALS AS ABOVE. **CAUTION:** REMOVE THIS WIRE FOR OTHER FREQUENCIES ON SINGLE WIRE.

For random length antennas (at least 1/4 wave is recommended at the lowest operating frequency) connect your antenna directly to the single wire terminal.

Mobile Installation

Using the mobile mounting bracket provided by DenTron, mount your JR. MONITOR under your car dashboard (a metal dash will help accomplish suitable grounding, although it is not required). Run a ground lead (number 14 or larger gauge) from the tuner ground lug to the car body. Make this lead as short as possible, and be sure to scrape any paint or finish away from the area where you make your connection.

Any commercially available mobile antenna is suitable, using 50 ohm COAX between your antenna installation and the JR. MONITOR'S COAX output (SO-239). Consult the ARRL Handbook or Bill Orr's Radio Handbook for further information on both mobile installations and suppression of ignition noise.

When using a 108" whip antenna in mobile applications, the JR. MONITOR is fully compatible from 40 to 10 Meters.

Operation

NOTE: IF AN SWR/POWER METER BRIDGE IS AVAILABLE, FOLLOW THESE INSTRUCTIONS (DENTRON W-2 WATTMETER RECOMMENDED.)

1. Set "Transmitter Matching" and "Antenna Matching" Controls to "5".
2. Listen on receiver for maximum band noise while turning inductance control for maximum noise.
   (A is highest frequency, L is lowest frequency)
3. Feed enough power through the system to get a reading on the SWR bridge or wattmeter in the reflected position.
4. Rotate Inductance Control for a drop in SWR reflected reading.
5. Adjust "Transmitter Matching" and "Antenna Matching" control for minimum SWR.
6. Now apply full power and touch up "Transmitter Matching" control if necessary.

If a W-2, or other Wattmeter/SWR bridge is not available, set both capacitor controls at 5, turn the relative output potentiometer (on the rear panel) fully clockwise, viewed from the rear. Preset your controls according to the chart below.

BAND	FREQUENCY	TRANSMITTER MATCHING	INDUCTANCE	ANTENNA MATCHING
160 M	1.830	0	L	4
75 M	3.800	5	J	5
40 M	7.200	5	E	5
20 M	14.200	5	C	6
15 M	21.300	0	B	4
10 M	28.600	0	A	5

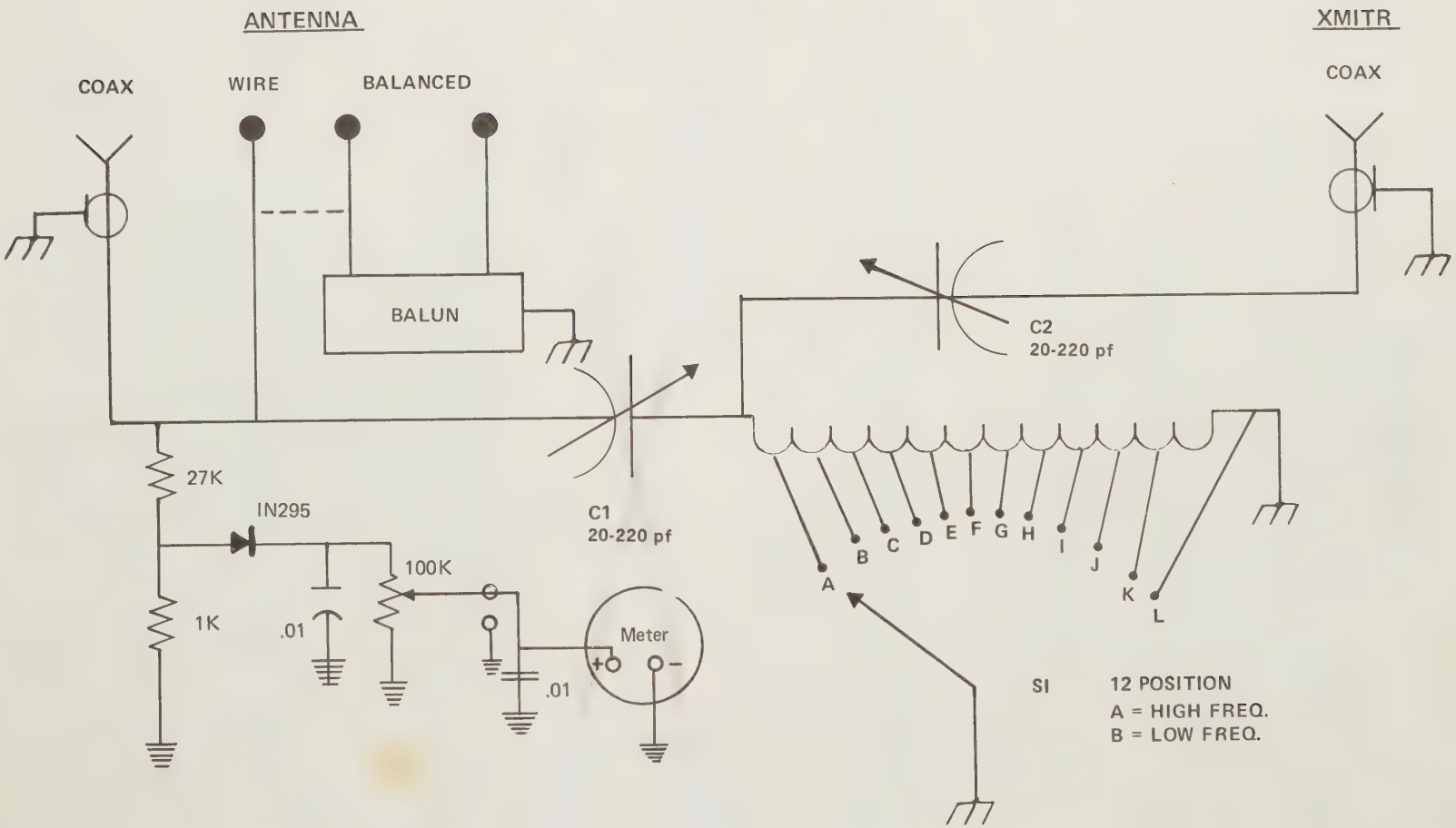
Insert a small amount of power and peak the antenna and transmitter matching controls according to the relative power output meter. Then try one tap above and below the starting inductance setting for maximum output on the relative power meter. Finally, peak your exciter for maximum output, and re-adjust the relative power output meter potentiometer for a mid-scale reading.

Antennas

SINGLE WIRE FED SYSTEM: For best results DenTron recommends at least a 1/4 wave at the lowest operating frequency. See ARRL Handbook or Bill Orr's Radio Handbook for details. If a 1/4 wave length is impractical, use 1/8 wave as a minimum. In using random length antennas a good ground is most essential. Keep ground leads as short as possible and follow operating instructions for tune up.

BALANCED FEEDLINE: To operate with balanced feeders, connect a jumper wire from the single wire connector on the JR. MONITOR'S rear panel to either of the balanced feed connectors. The feedline then goes to each of the balanced feed terminals. See operating instructions for tune up.

COAX FED ANTENNAS: The JR. MONITOR is capable of matching COAX feedlines between 50 and 75 ohms. Be certain to solder the braid of your COAX cable to the connectors. See ARRL Handbook for details.


ANTENNA
XMITR
COAX
WIRE
BALANCED
COAX
BALUN
C2
20-220 pf
27K
IN295
C1
20-220 pf
100K
1K
.01
Meter
.01
A
B
C
D
E
F
G
H
I
J
K
L
SI
12 POSITION
A = HIGH FREQ.
B = LOW FREQ.

DenTron

Limited Warranty

DenTron Radio is proud of the quality and workmanship of its communication equipment. If properly installed and operated in accordance with our instruction manual, it will give reliable performance. DenTron Radio extends to you as an owner of a new DenTron Radio Product the warranty set forth below:

For ninety (90) days from the date of original retail purchase, **DENTRON RADIO CO.** will either repair or replace, at its option, free of charge, any part or parts found to be defective in material or workmanship. Transportation charges for any parts submitted for replacement under this warranty must be paid by the purchaser.

This warranty will not apply to any part which has become inoperative due to misuse, excessive use, accident, neglect, improper maintenance, alterations, or unless the unit has been operated and maintained in accordance with the instructions furnished.

This warranty will not apply where the unit has been used commercially or when the unit has been used in conjunction with accessories not manufactured by **DENTRON RADIO CO.**

All implied warranties are limited in duration to ninety (90) days from the date of original retail purchase.

The provisions of this warranty specifically exclude any warranty or remedies for incidental or consequential damages.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

In order to obtain warranty service, send written notification to the following address: **DENTRON RADIO CO.**, Attn: Service Dept., 2100 Enterprise Parkway, Twinsburg, Ohio 44087.

Any written notification should include the model number of the unit, date and place of purchase, and a description of the defective part or condition. Do not return the unit or any parts unless requested to do so by **DENTRON RADIO CO.**

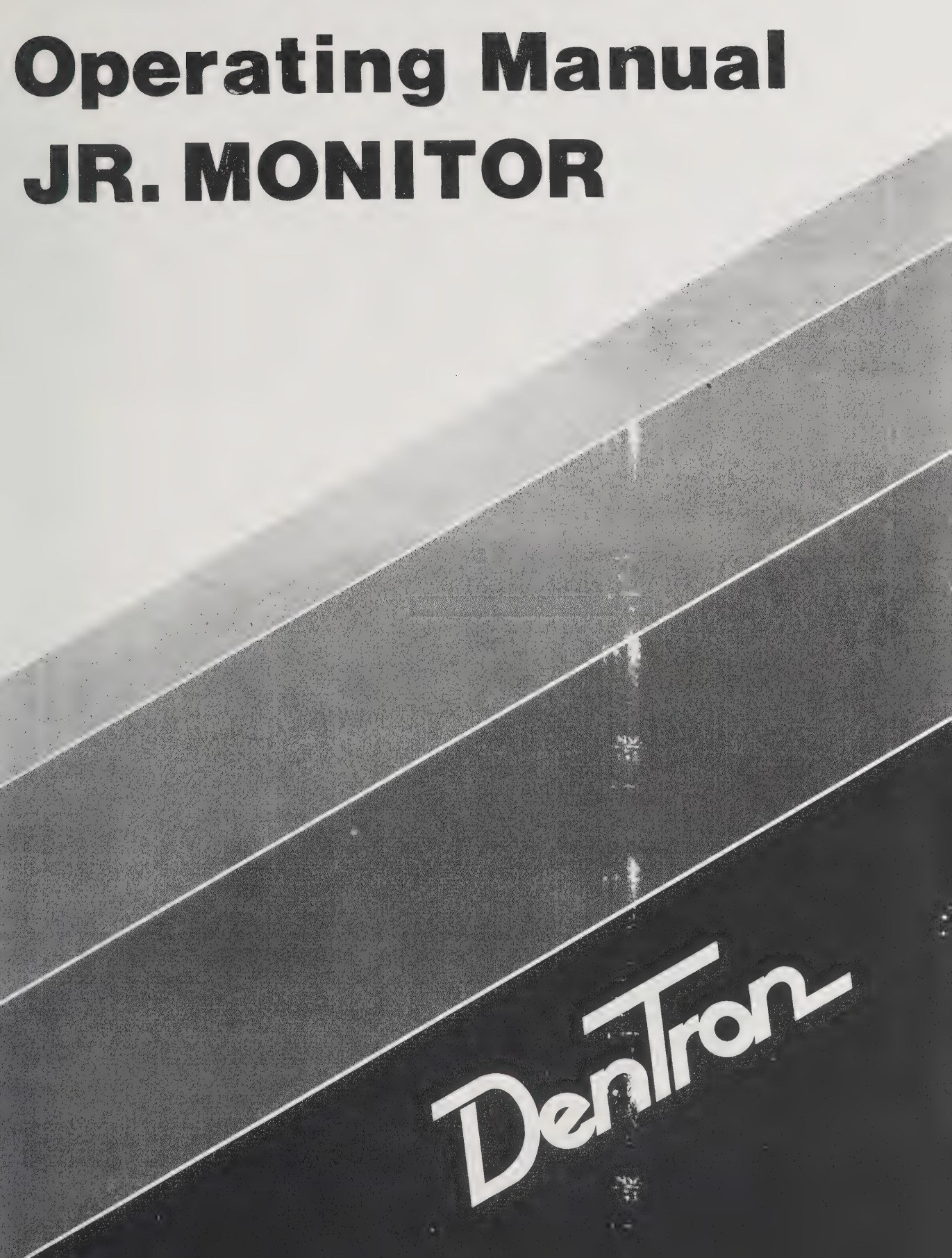
Although the return of the DENTRON Warranty Registration Card is not a condition precedent to warranty coverage and performance, the purchaser is encouraged to promptly return the Warranty Registration Card upon purchase in order to more easily facilitate the handling of any future service under these warranty provisions.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

DenTron
Radio Co., Inc.

2100 Enterprise Parkway
Twinsburg, Ohio 44087
(216) 425-3173

Operating Manual
JR. MONITOR



Introduction

The JR. MONITOR Antenna Tuner is a sub-compact 300 watt capability antenna tuner of modern design. Its features offer the Amateur, SWL, or CBer the ultimate in operating flexibility. Virtually any type of antenna system can be used, whether it be COAX (50 or 75 ohm), balanced line (twin-lead), or random wire. The JR. MONITOR not only matches any type of feedline to a nominal 50 ohms, but is small enough to go absolutely anywhere from mobile to fixed to portable use. A mobile mounting bracket is included, and the unit is equipped with rubber feet to protect other equipment when stacking the JR. MONITOR. Another unique feature built into the unit is an RF sampling circuit and companion relative power output meter, front panel mounted. Using the relative power output meter greatly aids tuning, especially when an SWR bridge/power meter (such as the DenTron W-2) is unavailable. The frequency range of the JR. MONITOR tuner is 1.8 to 30 MHz, continuous. The JR. MONITOR was designed to be used with any exciter or transceiver producing up to 300 watts output. American-made components and all-metal construction of the unit combine for long life and trouble-free service.

Installation

The most essential component in any system utilizing a tuner is a good earth ground. A cold water pipe near the operating position, chassis ground in operating mobile, or a ground rod as near the station installation as possible are all suitable. Be certain to take your ground lead directly to the JR. MONITOR first, then to your transmitter, and finally to the remainder of your station equipment. If you are using a low pass filter for harmonic attenuation, be certain to place it as close to the input (SO-239 marked Transmitter) of the JR. MONITOR as possible. This will offer the filter device a pure 50 ohm load, and thus improve its efficiency. Using 50 ohm COAX (RG-8 or RG-58 or equivalent), connect your transmitter or transceiver to the transmitter input of the JR. MONITOR. As short a length of cable between units, as possible, is recommended. When using the JR. MONITOR with an SWR bridge/power meter (such as the DenTron W-2), insert the bridge between the tuner and transmitter.

Antennas can be connected to the JR. MONITOR in a variety of ways, depending on type of feedline employed. For COAX fed antennas, connect your antenna to the SO-239 connector marked COAX. For balanced (twin-lead) systems, connect one side of your feedline to either one of the balanced feed terminals, the other side of your feedline to the other balanced feed terminal.

NOTE: WHEN USING BALANCED FEED ANTENNA SYSTEMS, A JUMPER WIRE MUST BE INSTALLED BETWEEN ONE OF THE BALANCED FEED TERMINALS AND THE SINGLE WIRE TERMINAL. IF EXPERIENCING DIFFICULTY WHEN TUNING A RANDOM WIRE FOR 160 METERS, PLACE THE JUMPER ACROSS THE TERMINALS AS ABOVE. **CAUTION:** REMOVE THIS WIRE FOR OTHER FREQUENCIES ON SINGLE WIRE.

For random length antennas (at least 1/4 wave is recommended at the lowest operating frequency) connect your antenna directly to the single wire terminal.

Mobile Installation

Using the mobile mounting bracket provided by DenTron, mount your JR. MONITOR under your car dashboard (a metal dash will help accomplish suitable grounding, although it is not required). Run a ground lead (number 14 or larger gauge) from the tuner ground lug to the car body. Make this lead as short as possible, and be sure to scrape any paint or finish away from the area where you make your connection.

Any commercially available mobile antenna is suitable, using 50 ohm COAX between your antenna installation and the JR. MONITOR'S COAX output (SO-239). Consult the ARRL Handbook or Bill Orr's Radio Handbook for further information on both mobile installations and suppression of ignition noise.

When using a 108" whip antenna in mobile applications, the JR. MONITOR is fully compatible from 40 to 10 Meters.

Operation

NOTE: IF AN SWR/POWER METER BRIDGE IS AVAILABLE, FOLLOW THESE INSTRUCTIONS (DENTRON W-2 WATTMETER RECOMMENDED.)

1. Set "Transmitter Matching" and "Antenna Matching" Controls to "5".
2. Listen on receiver for maximum band noise while turning inductance control for maximum noise.
   (A is highest frequency, L is lowest frequency)
3. Feed enough power through the system to get a reading on the SWR bridge or wattmeter in the reflected position.
4. Rotate Inductance Control for a drop in SWR reflected reading.
5. Adjust "Transmitter Matching" and "Antenna Matching" control for minimum SWR.
6. Now apply full power and touch up "Transmitter Matching" control if necessary.

If a W-2, or other Wattmeter/SWR bridge is not available, set both capacitor controls at 5, turn the relative output potentiometer (on the rear panel) fully clockwise, viewed from the rear. Preset your controls according to the chart below.

ND	*FREQUENCY*	*TRANSMITTER MATCHING*	*INDUCTANCE*	*ANTENNA MATCHING*
0 M	*1.830*	*0*	*L*	*4*
5 M	*3.800*	*5*	*J*	*5*
0 M	*7.200*	*5*	*E*	*5*
0 M	*14.200*	*5*	*C*	*6*
5 M	*21.300*	*0*	*B*	*4*
0 M	*28.600*	*0*	*A*	*5*

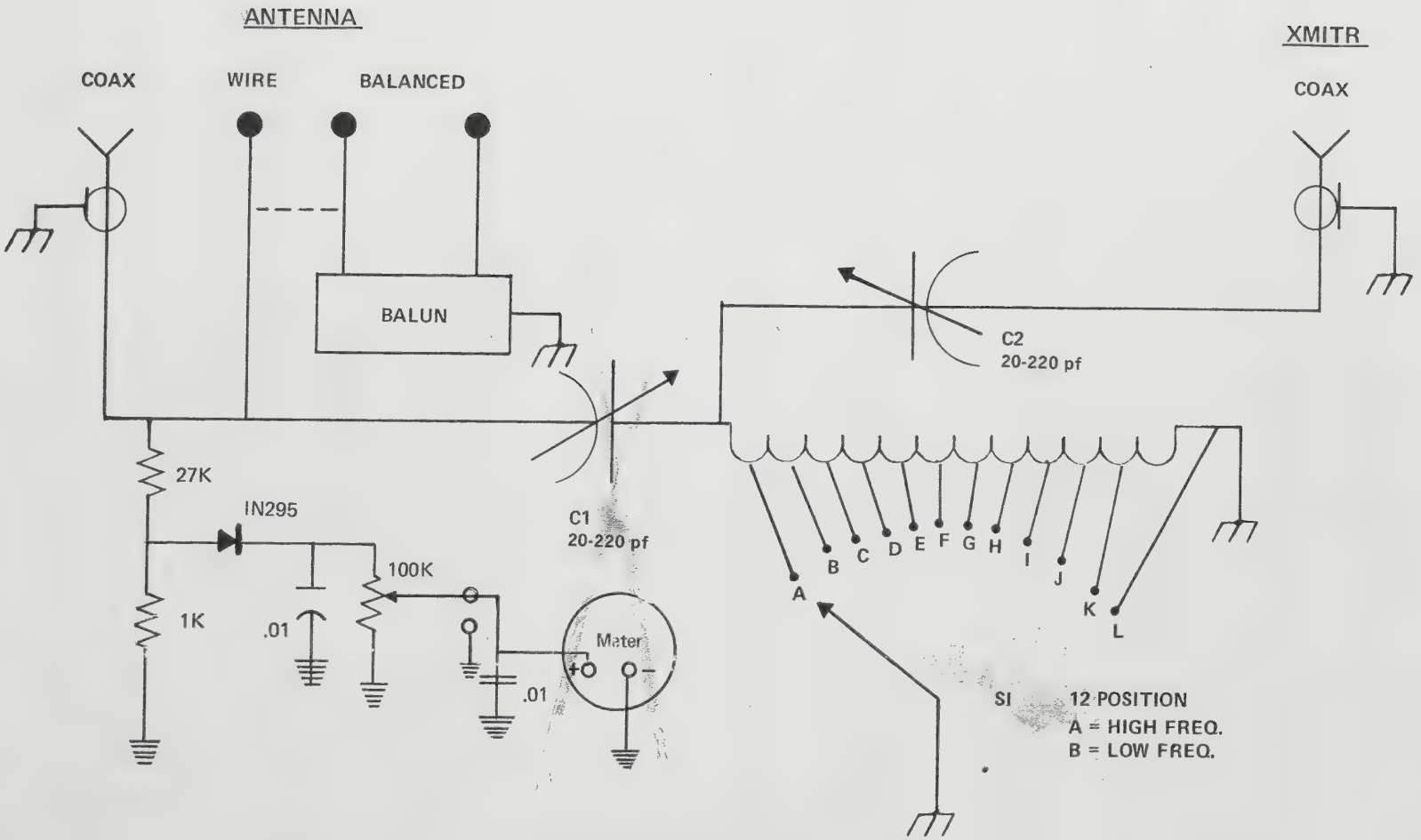
Insert a small amount of power and peak the antenna and transmitter matching controls according to the relative power output meter. Then try one tap above and below the starting inductance setting for maximum output on the relative power meter. Finally, peak your exciter for maximum output, and re-adjust the relative power output meter potentiometer for a mid-scale reading.

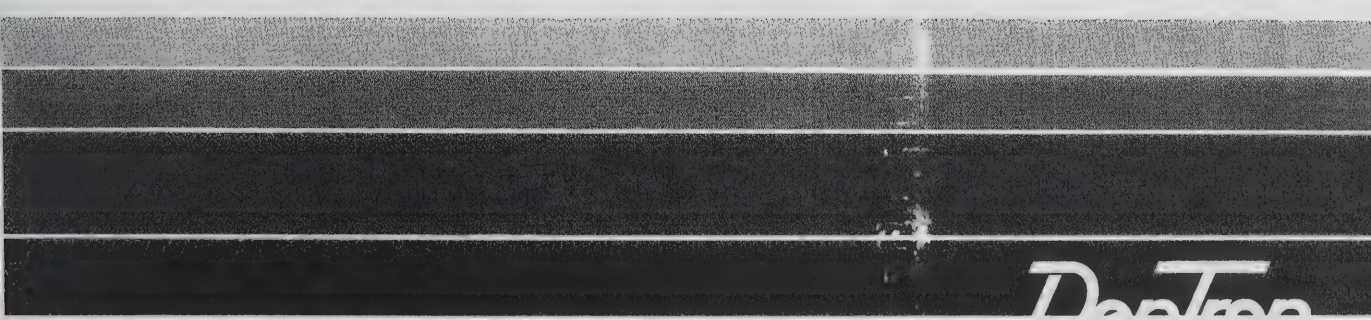
Antennas

SINGLE WIRE FED SYSTEM: For best results DenTron recommends at least a 1/4 wave at the lowest operating frequency. See ARRL Handbook or Bill Orr's Radio Handbook for details. If a 1/4 wave length is impractical, use 1/8 wave as a minimum. In using random length antennas a good ground is most essential. Keep ground leads as short as possible and follow operating instructions for tune up.

BALANCED FEEDLINE: To operate with balanced feeders, connect a jumper wire from the single wire connector on the JR. MONITOR'S rear panel to either of the balanced feed connectors. The feedline then goes to each of the balanced feed terminals. See operating instructions for tune up.

COAX FED ANTENNAS: The JR. MONITOR is capable of matching COAX feedlines between 50 and 75 ohms. Be certain to solder the braid of your COAX cable to the connectors. See ARRL Handbook for details.


ANTENNA
XMITR
COAX
WIRE
BALANCED
COAX
BALUN
C2
20-220 pf
27K
IN295
C1
20-220 pf
100K
1K
.01
Meter
.01
A
B
C
D
E
F
G
H
I
J
K
L
SI
12 POSITION
A = HIGH FREQ.
B = LOW FREQ.


DenTrap

Limited Warranty

DenTron Radio is proud of the quality and workmanship of its communication equipment. If properly installed and operated in accordance with our instruction manual, it will give reliable performance. DenTron Radio extends to you as an owner of a new DenTron Radio Product the warranty set forth below:

For ninety (90) days from the date of original retail purchase, **DENTRON RADIO CO.** will either repair or replace, at its option, free of charge, any part or parts found to be defective in material or workmanship. Transportation charges for any parts submitted for replacement under this warranty must be paid by the purchaser.

This warranty will not apply to any part which has become inoperative due to misuse, excessive use, accident, neglect, improper maintenance, alterations, or unless the unit has been operated and maintained in accordance with the instructions furnished.

This warranty will not apply where the unit has been used commercially or when the unit has been used in conjunction with accessories not manufactured by **DENTRON RADIO CO.**

All implied warranties are limited in duration to ninety (90) days from the date of original retail purchase.

The provisions of this warranty specifically exclude any warranty or remedies for incidental or consequential damages.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

In order to obtain warranty service, send written notification to the following address: **DENTRON RADIO CO.**, Attn: Service Dept., 2100 Enterprise Parkway, Twinsburg, Ohio 44087.

Any written notification should include the model number of the unit, date and place of purchase, and a description of the defective part or condition. Do not return the unit or any parts unless requested to do so by **DENTRON RADIO CO.**

Although the return of the DENTRON Warranty Registration Card is not a condition precedent to warranty coverage and performance, the purchaser is encouraged to promptly return the Warranty Registration Card upon purchase in order to more easily facilitate the handling of any future service under these warranty provisions.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

DenTron
Radio Co., Inc.

2100 Enterprise Parkway
Twinsburg, Ohio 44087
(216) 425-3173

Operating Manual
MT-2000A


TRANSMITTER MATCHING
FUNCTION
INDUCTANCE SELECTOR
ANTENNA MATCHING
MT-2000A
ANTENNA TUNER
Denton RADIO CO.

Installation

Unpacking

Carefully remove the MT-2000A from the shipping carton and examine it for evidence of damage. Immediately notify the shipping company should any damage be found.

Location

The MT-2000A will work properly in almost any location. Select a location on the operating table that will allow easy access to the control knobs.

Connections

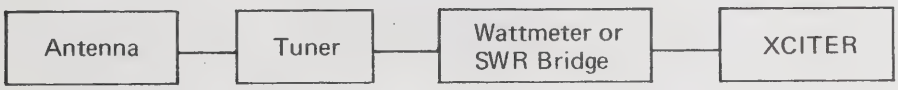
Connect the RF Output of your transmitter or transceiver to an SWR Bridge or Wattmeter (DenTron W-2). Connect the MT-2000A from the SWR Bridge or Wattmeter, using as short a length of 50 ohm coaxial cable as possible. We recommend cable such as RG-8/U. Connect the coaxial line of your antenna to the COAX connector on the MT-2000A rear panel. If you are using a Balanced Feed antenna system, or a long wire, connect them to the appropriately marked feed throughs on the MT-2000A rear panel. (See diagram below).

Note: When using Balanced Feed antenna systems, a jumper wire must be installed between one of the Balanced Feed terminals and the Single Wire terminal. If experiencing difficulty when tuning a random wire for 160 meters, place the jumper across the terminals as above. CAUTION: Remove this wire for other frequencies on single wire.

Note: NEVER CONNECT MORE THAN ONE ANTENNA TO THE MT-2000A AT A TIME.

A good ground is essential when using an antenna tuner. Connect a suitable ground with as short a lead as possible, directly to the ground connection on the MT-2000A. Then run your ground lead from the MT-2000A to your other station equipment, such as power supplies, transmitters, and receivers. See the ARRL Handbook or Bill Orr's Radio Handbook for details on suitable grounding.

MT-2000A IN BASIC SYSTEM



Description

The Model MT-2000A Antenna Tuner is a precision-built, compact, high performance instrument of advanced design, providing a maximum possible flexibility for the operator.

The MT-2000A is equipped with an antenna grounding switch and coax bypass switch.

The MT-2000A has been designed to match any transmitter (3000 Watts P.E.P. maximum) to a multitude of antenna systems, including coaxial lines, a long wire system, and a balanced feed line. The MT-2000A will tune any of these systems from 1.8-30 MH_Z and it will handle a full 3kw P.E.P. Built modularly, the MT-2000A makes the ideal addition to any HF communication system operating between 1.8-30 MH_Z.

MT-2000A Specifications

Frequency Coverage: 1.8-30 MH_Z Continuous
Input Impedance: 50 ohms (Resistive)
Output Impedance:
Coax - 50 ohms nominal; may range from a few ohms to a high impedance.
Long Wire either High or Low Impedance
Balanced Line 75 to 600 ohms
Power Capability: 3000 watts P.E.P.
Insertion Loss: .5 db or less after tuning
Dimensions: 5½" high, 14" wide, 14" deep
Weight: 18 pounds
Front panel controls are provided for the adjustment of transmitter matching, antenna matching, inductance selector, antenna grounding, and coax bypass.

Warning

Do not put more than 100 Watts into the MT-2000A prior to tuning. Always tune with small powers. Only after tuning, increase driver gain to maximum output. Do not use the inductance selector, bypass, or antenna grounding switch with power applied to the MT-2000A.

Operation

NOTE: NEVER CONNECT MORE THAN ONE ANTENNA SYSTEM TO THE MT-2000A AT A TIME.

1. Set the "Function" switch on "Tuner" Position. Note that this control only affects feedlines connected to the "Coax" antenna connector on the MT-2000A rear panel. Balanced or Long Wire antennas connected to the appropriate feed thru connectors on the rear panel will not be affected by the "Function" switch.

2. Set the "Lightning Protect - Operate" switch to "Operate." Note that to engage the lightning protection function of the MT-2000A, you must put the lightning switch in "Protect," and the "Function" switch in "Tuner." CAUTION: It is essential that you NEVER apply power to the MT-2000A under any conditions with the "Lightning Protect - Operate" switch in the "Lightning Protect" position. This will seriously damage the MT-2000A and possibly your transmitter as well.

3. Set "Transmitter Matching" and "Antenna Matching" controls to position 5.

4. Listen on receiver for maximum band noise while turning inductance selector for maximum noise.

5. Feed enough power through the system to get a reading on the reflected power meter. (DenTron W-2)

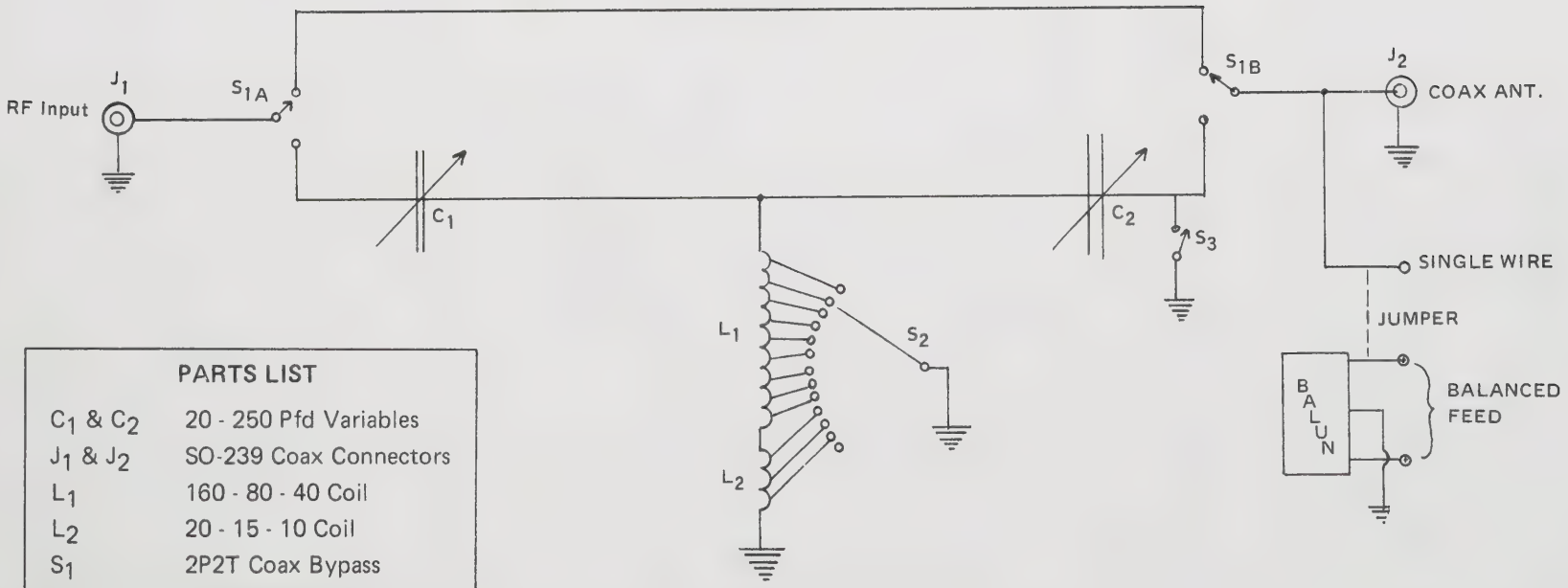
6. Rotate inductance control for a drop on this reading.

7. Adjust "Transmitter Matching" and "Antenna Matching" controls for a minimum reading on the reflected meter.

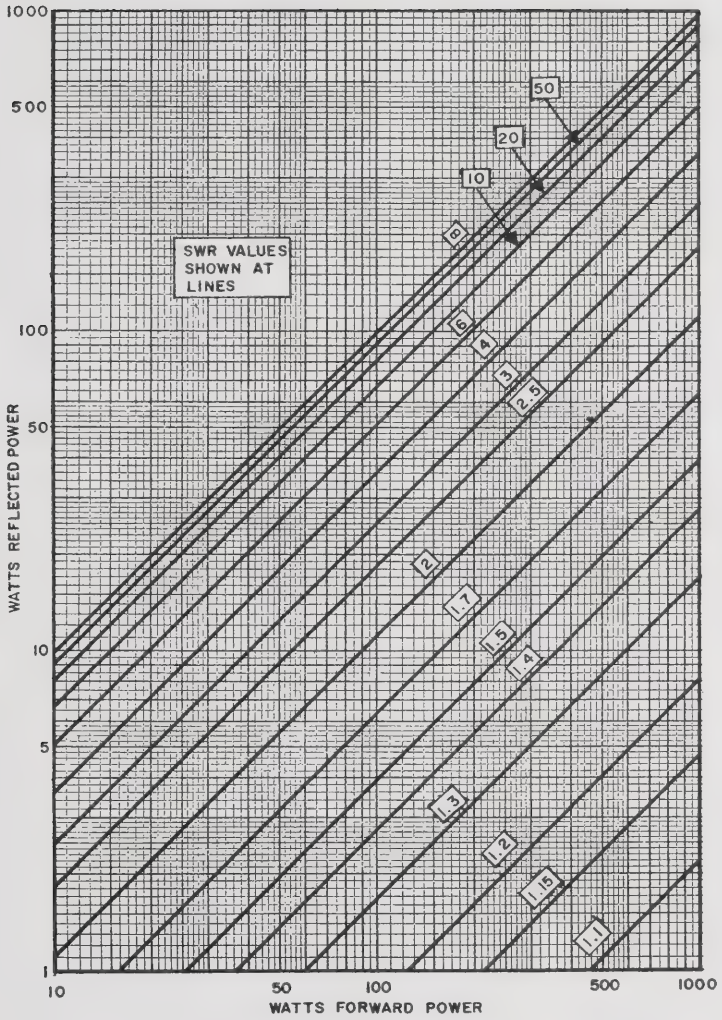
8. "A" is highest frequency; "R" is lowest frequency on "Inductor Switch."

9. For 20, 15, and 10 meter operation, "Transmitter" match control should be set to 8 instead of 5 as previously mentioned.

MT-2000A



PARTS LIST	
C_1 & C_2	20 - 250 Pfd Variables
J_1 & J_2	SO-239 Coax Connectors
L_1	160 - 80 - 40 Coil
L_2	20 - 15 - 10 Coil
S_1	2P2T Coax Bypass
S_2	Inductance Switch
S_3	Lightning Protect Switch


1000
500
100
50
10
5
1
WATTS REFLECTED POWER
SWR VALUES SHOWN AT LINES
50
20
10
6
6
4
3
2.5
2
1.7
1.5
1.4
1.3
1.2
1.15
1.1
10
50
100
500
1000
WATTS FORWARD POWER

DenTron

Limited Warranty

DenTron Radio is proud of the quality and workmanship of its communication equipment. If properly installed and operated in accordance with our instruction manual, it will give reliable performance. DenTron Radio extends to you as an owner of a new DenTron Radio Product the warranty set forth below:

For ninety (90) days from the date of original retail purchase, **DENTRON RADIO CO.** will either repair or replace, at its option, free of charge, any part or parts found to be defective in material or workmanship. Transportation charges for any parts submitted for replacement under this warranty must be paid by the purchaser.

This warranty will not apply to any part which has become inoperative due to misuse, excessive use, accident, neglect, improper maintenance, alterations, or unless the unit has been operated and maintained in accordance with the instructions furnished.

This warranty will not apply where the unit has been used commercially or when the unit has been used in conjunction with accessories not manufactured by **DENTRON RADIO CO.**

All implied warranties are limited in duration to ninety (90) days from the date of original retail purchase.

The provisions of this warranty specifically exclude any warranty or remedies for incidental or consequential damages.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

In order to obtain warranty service, send written notification to the following address: **DENTRON RADIO CO.**, Attn: Service Dept., 2100 Enterprise Parkway, Twinsburg, Ohio 44087.

Any written notification should include the model number of the unit, date and place of purchase, and a description of the defective part or condition. Do not return the unit or any parts unless requested to do so by **DENTRON RADIO CO.**

Although the return of the DENTRON Warranty Registration Card is not a condition precedent to warranty coverage and performance, the purchaser is encouraged to promptly return the Warranty Registration Card upon purchase in order to more easily facilitate the handling of any future service under these warranty provisions.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

DenTron
Radio Co., Inc

2100 Enterprise Parkway
Twinsburg, Ohio 44087
(216) 425-3173

DenTron AT-1K Antenna Tuner
1 kw

Introduction

The AT-1K is everything DenTron Tuners are famous for and more! The AT-1K includes a front panel SWR and relative power meter, and a built-in front panel antenna switch that handles up to four antennas.

When properly adjusted, the AT-1K will tune out load reactance and transform the load impedance to 50-70 ohms. A heavy duty 2 core balun is optional, so antennas fed with open wire (balanced) feedline may be properly tuned to the desired operating frequency.

Single wire, balanced feed, and coax cable fed antenna systems can be used with the AT-1K, although everything from bedsprings to raingutters and downspouts have been successfully used by DenTron tuner owners. The unit allows front panel switching of your antennas, plus tuner bypass. Another antenna selector switch position allows for permanent installation of a dummy load, such as the DenTron Big Dummy.

Power handling capability of the AT-1K is 1 KW CW and 1200 Watts PEP SSB (both measured in DC input to the final amplifier). The unit is compact but rugged, in an all-metal tightly shielded cabinet and weighs in at less than 7 pounds.

Specifications:

Power Handling Capabilities:	1200 w PEP input 1 KW CW input
Metering:	Relative forward power standing wave ratio.
Antenna Switching:	Alternate coax bypass coax tune single wire balanced feed with optional balun
Dimensions:	H 3¾" W 10" Dep. 9½" Weight: 7 lbs.

Theory of Operation

When one installs an antenna system of any type, a complex load may exist at the input end of the feed line. Depending on the frequency in use and the feedline length, this load can be a very high or very low impedance, or somewhere in between. The DenTron AT-1K is designed to match these [illegible] variations to your normal 50 ohm transmitter/receiver impedance, and thus give you maximum efficiency in both transmit and receive modes.

It is important to remember that nothing will compensate for coaxial feed line loss when it is terminated with something other than its normal impedance. In other words, a severe mismatch at the antenna end of a 50 ohm feedline can be tuned out at the other end of the line, but you still have some degree of loss in the coax, and if it is high enough, the results can be inefficiency in both the transmit and receive functions. The AT-1K, however, will overcome any ill effect on your transmitting/receiving equipment, since it will see the nominal 50 ohm load offered by the tuner.

Remember, the closer your antenna system is to a fundamental or harmonic resonance, the better it will perform. The AT-1K gives you that big degree of flexibility required to put all of your power where it does the most good.

Unpacking Instructions

Carefully remove your AT-1K from its packing carton, making sure there is no damage evident from shipping. If there is any damage, notify the delivering shipper immediately, fully describing the damage.

Fully complete the DenTron Registration card included in the information package and return it to DenTron. Do not destroy the packing material, since it will be usable later on should you require factory service or need to transport the tuner for any other reason.

Installation

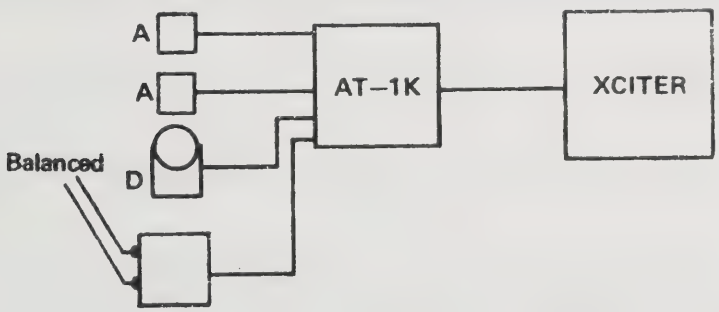
1. Connect a good earth ground to the **ground terminal** on the tuner's rear panel. A ground stake or rod is perferred, but a short, heavy wire clamped to a cold water pipe will usually suffice, if all connections are clean. It is most important to make your ground lead of the heaviest wire available and to use the shortest length possible between the ground point and tuner. Be sure to run a short extension of the ground lead from your tuner to all other station equipment, especially your transmitter and linear amplifier.

   SEE ARRL HANDBOOK FOR MORE INFORMATION ON EARTH GROUNDING.

2. Connect your antennas to the appropriate output terminals on the rear panel.

   Bal. Out for balanced (or ladder) line feed.
   Coax Out for 50 to 70 ohm coax cable.
   Wire Out for long wire or random length antennas.
   Alt. Out for secondary coaxial antenna or dummy load, such as the DenTron Big Dummy.

AT-1K IN BASIC SYSTEM



CAUTION

In following steps keep your exciter power output level as low as possible until you have reached an optimum match. Increase power gradually, readjusting the tuner with each step up in power.

Operation

1. Set tuner controls as follows:
   A. For 50 ohm settings see Chart A.

CHART A

BASIC CONTROL SETTINGS
(Into a 50 ohm resistive load)

BAND & FREQ.	TRANS.	INDUCTANCE	ANT.
160 - 1.830	1	L	2.5
75 - 3.8	3	E	4.0
40 - 7.2	5.5	C	6.0
20 - 14.2	4	B	1.0
15 - 21.3	3.5	B	3.0
10 - 28.6	8.25	A	8.0

   B. For an unknown antenna system:
      160-40 meters - Transmitter and Antenna controls at 5 on respective scales. Inductance Selector to position D.
      20-10 meters - Transmitter and Antenna controls at 6 on respective scales. Inductance Selector to position A.
2. Turn the front panel sensitivity control fully clockwise.
3. Key your exciter and apply just enough RF power to cause a reading on the relative power SWR meter.

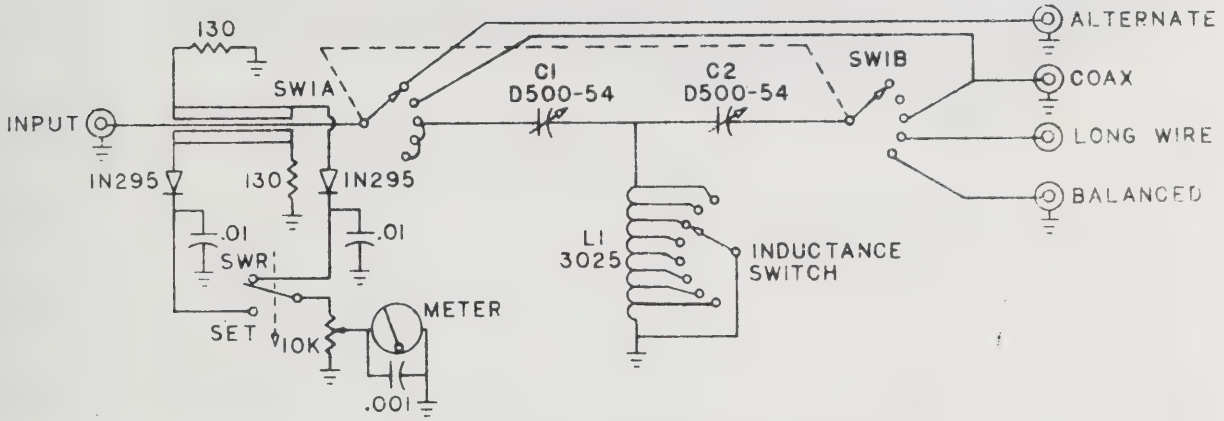
Caution

Keep your exciter power output level as low as possible until you have reached an optimum match. Increase power gradually, readjusting the tuner with each step up in power.

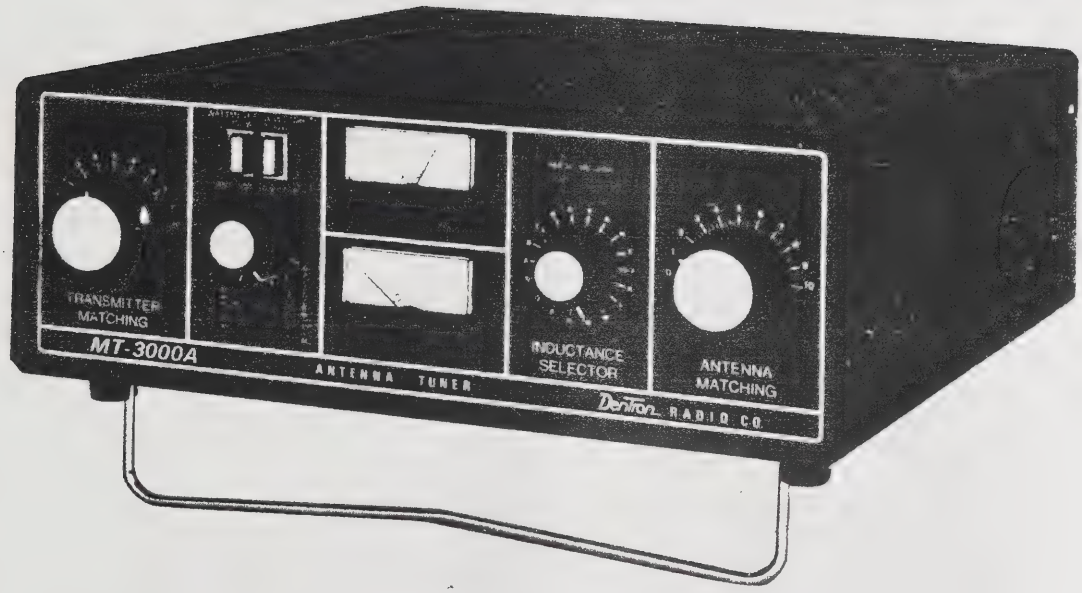
4. Next, rotate the inductance selector for a minimum reading on the VSWR meter, reading on the front panel relative power SWR output meter.
5. Next tune the antenna matching and then the transmitter matching controls for minimum reading on the VSWR meter.
6. Remember that all three front panel tuning controls interact with each other, so readjust each one until you have reached an absolute minimum reading on the VSWR meter.
7. Once you've tuned up, make a record of each tuner setting per band. That will make for quick band changing.
8. Apply full drive to your final amplifier, push in the set/SWR sensitivity control and set the relative power/SWR meter to the set line on the scale. When released, the meter will automatically calculate the SWR.
9. For SSB modulation adjustment, push in the set/SWR control and observe the meter during operation. The meter should never go beyond 75% of full scale. If it does, adjust the audio gain control on your exciter accordingly.

AT-1K Tuner Parts List

C1	500 Pf Variable
C2	500 Pf Variable
L1	Tapped Inductor
SW1 A&B	5 Pos. DP ceramic SW.
Ind. Sw.	12 Pos. SP ceramic SW.

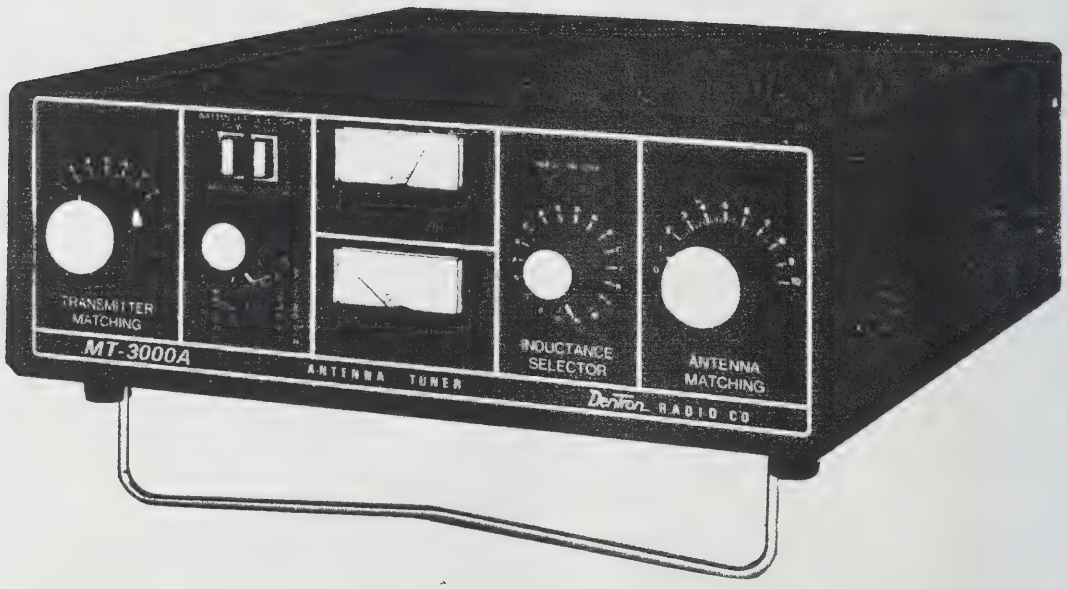


AT-1K SCHEMATIC



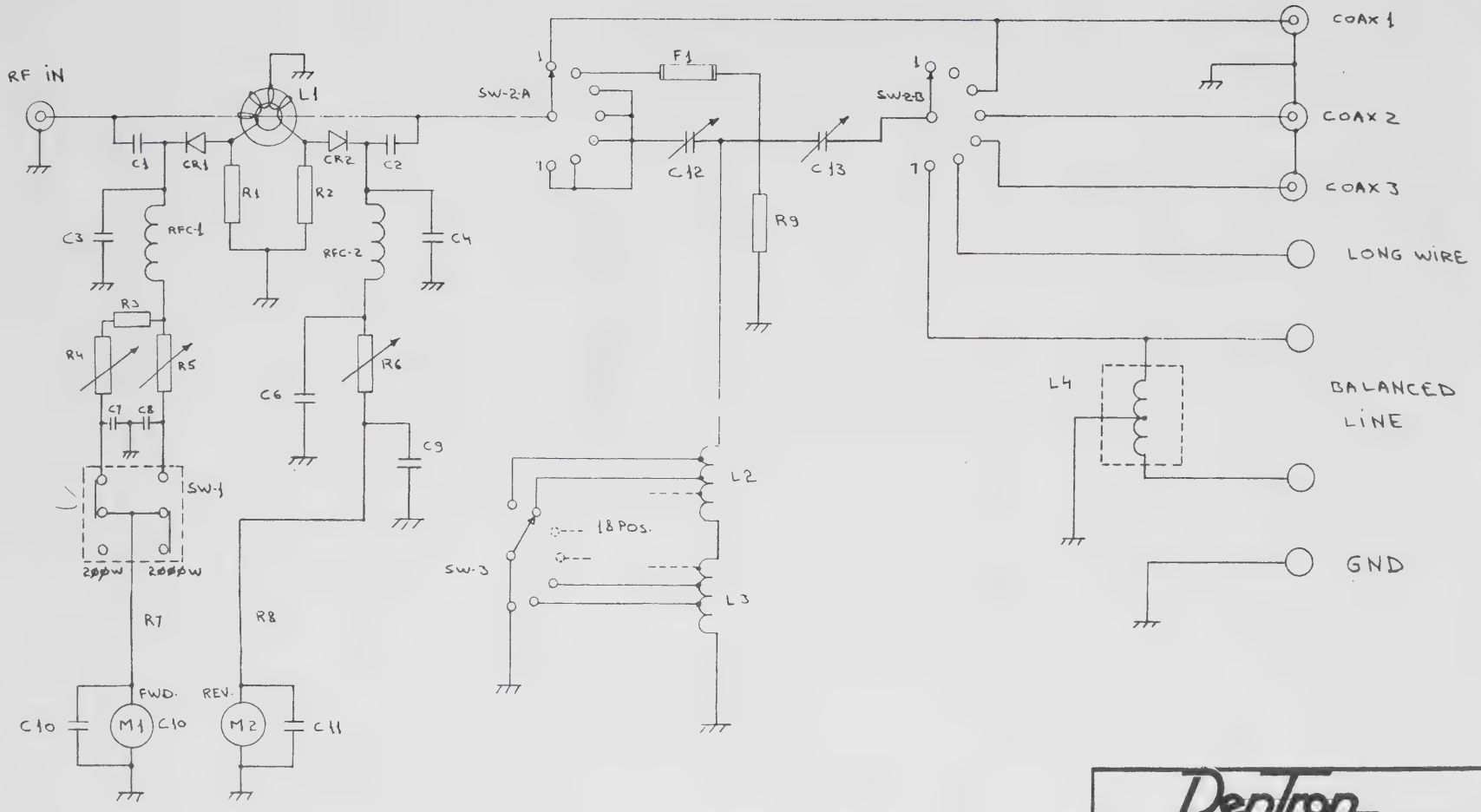
MT-3000A

Operating Manual



MT-3000A

Operating Manual


RF IN
L1
C1
CR1
CR2
C2
R1
R2
C3
RFC-1
RFC-2
C4
R3
R4
R5
R6
C6
C7
C8
C9
SW-1
200Ω
200Ω
R7
R8
FWD.
REV.
C10
M1
C10
M2
C11
SW-2-A
F1
C12
C13
SW-2-B
R9
COAX 1
COAX 2
COAX 3
LONG WIRE
BALANCED LINE
GND
L4
L2
L3
SW-3
18 POS.
DenTron
APPROVED BY:
Cornell Dubilier
DRAWN BY J.D.
SCALE
DATE
MT-3000-A

Description

The Model MT-3000A Antenna Tuner is a precision-built, compact, high performance instrument of advanced design, providing maximum possible flexibility for the operator.

The MT-3000A is equipped with an in-line dual wattmeter showing simultaneously forward and reverse power on two separate precision meters, with front panel pushbutton switchable ranges.

The MT-3000A has been designed to match any transmitter (3000 watts P.E.P. maximum) to a multitude of antenna systems, including three coaxial lines, a long wire system, and a balanced feed line. There is also a built-in 200 watt Dummy Load which can be used to tune up without on-air interference. The MT-3000A will tune any of these systems from 1.8-30 MH_Z and it will handle a full 3kw P.E.P. Built modularly, the MT-3000 makes the ideal addition to any HF communication system operating between 1.8-30 MH_Z

MT-3000A Specifications

Frequency Coverage: 1.8-30 MH_Z Continuous
Input Impedance: 50 ohms (Resistive)
Output Impedance:

Coax 1	50 ohms nominal	May range from a few ohms to a high impedance.
Coax 2	50 ohms nominal	
Coax 3	50 ohms nominal	

Long Wire either High or Low Impedance
Balanced Line 75 to 600 ohms
Power Capability: 3000 watts P.E.P.
Wattmeter Accuracy: ± 10% full scale
Insertion Loss: .5 db or less after tuning
Dimensions: 5½" high, 14" wide, 14" deep
Weight: 18 lbs.
Front panel controls are provided for the adjustment of transmitter matching, antenna matching, inductance selector, antenna selector and wattmeter selector.
Dummy Load Power Handling: 200 watts for 30 seconds
Dummy Load Duty Cycle: 50%, 30 seconds on 30 seconds off

Warning

Do not put more than 100 watts into the MT-3000A prior to tuning. Always tune with small powers. Only after tuning increase driver gain to maximum output. Do not use inductance selector or antenna selector with power applied to the MT-3000A.

Installation

Unpacking

Carefully remove the MT-3000A from the shipping carton and examine it for evidence of damage. Immediately notify the shipping company should any damage be found.

Location

The MT-3000A will work properly in almost any location. Select a location on the operating table that will allow easy access to the control knobs.

Connections

Connect the RF Output of your transmitter to the transmitter connector of the MT-3000A, using 50 ohm coaxial cable such as RG-8/U. Connect the coaxial line of your antenna to COAX 1 connector. Connect another coaxial line of a second antenna to COAX 2 connector. A third coax antenna can be connected to COAX 3 connector. Connect a long wire antenna to post marked LONG WIRE. Also connect a good ground to GND post.

Connect balanced feed line to posts marked BALANCE. You now have a choice of five antennas and a dummy load which you can switch from the front panel. You can also from the front panel bypass the MT-3000A on COAX 1 only.

Operation

1. Switch Antenna Selector to "Dummy Load" and tune up the exciter into the 50 ohm Dummy Load; this will preset the exciter controls for a 50 ohm resistive load. Then switch to the proper antenna to be used.

2. Set "Transmitter Matching" and "Antenna Matching" controls to position 5.

3. Listen on receiver for maximum band noise while turning inductance selector for maximum noise

4. Feed enough power through the system to get a reading on the reflected meter.

5. Rotate inductance control for a drop on this reading.

6. Adjust "Transmitter Matching" and "Antenna Matching" controls for a minimum reading on the reflected meter.

Dummy Load

The MT-3000A is equipped with a built-in dummy load which can be selected from the front panel. This dummy load is capable of handling 200 watts for a period of 30 seconds.

The Duty Cycle is 50% (30 seconds on - 30 seconds off).

The dummy load is protected by a 2A fuse which will interrupt RF coming from exciter if more than 200 watts are applied to the dummy load.

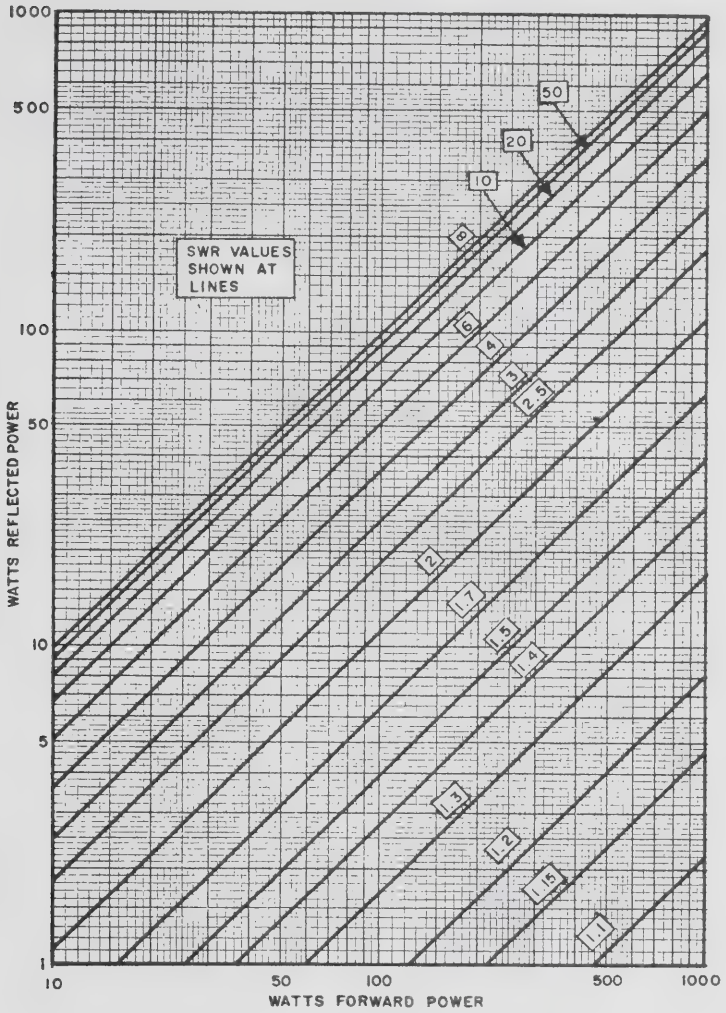
Warning

Do not apply more than 200 watts of RF to the MT-3000A with antenna selector switch in dummy load position, or fuse will be interrupted and transmitter may be damaged. Do not apply RF to the MT-3000A with antenna selector switch in dummy load position for more than 30 seconds at the time. (30 seconds on - 30 seconds off)

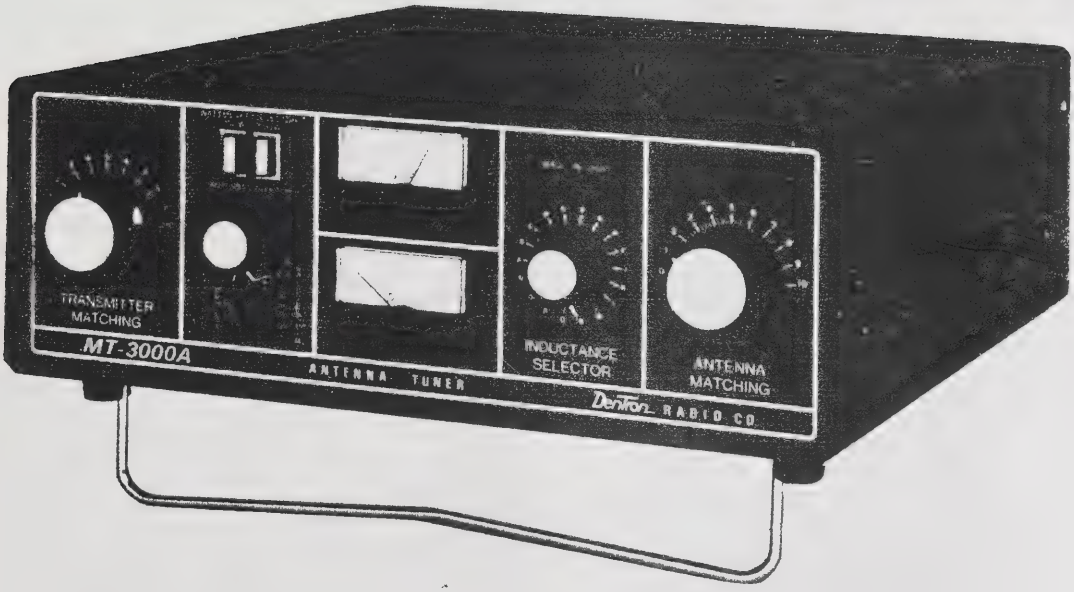
Parts List

C_1, C_2	1-8 Pf
C_3, C_4	220 Pf
C_5, C_{11}	.01 Disc
C_{12}, C_{13}	120 Pf Variable
R_1	10 ohm ½ W
R_2	43 ohm ½ W
R_3	50 K ohm ½ W
R_4, R_5, R_6	100K ohm 1/3 W POT
R_7, R_8	15K ohm ½ W
R_9	50 ohm noninductive
L_1	Toroid Coil
L_2	Secondary Coil
L_3	Primary Coil
L_4	Ballun
SW1	Push Button Switch
SW2	Antenna Selector Switch
SW3	Inductance Switch
$M_1 M_2$	200 uA Meter
F_1	2A Fast Blow Fuse

SWR GRAPH For Forward Vs. Reflected Power



DenTron

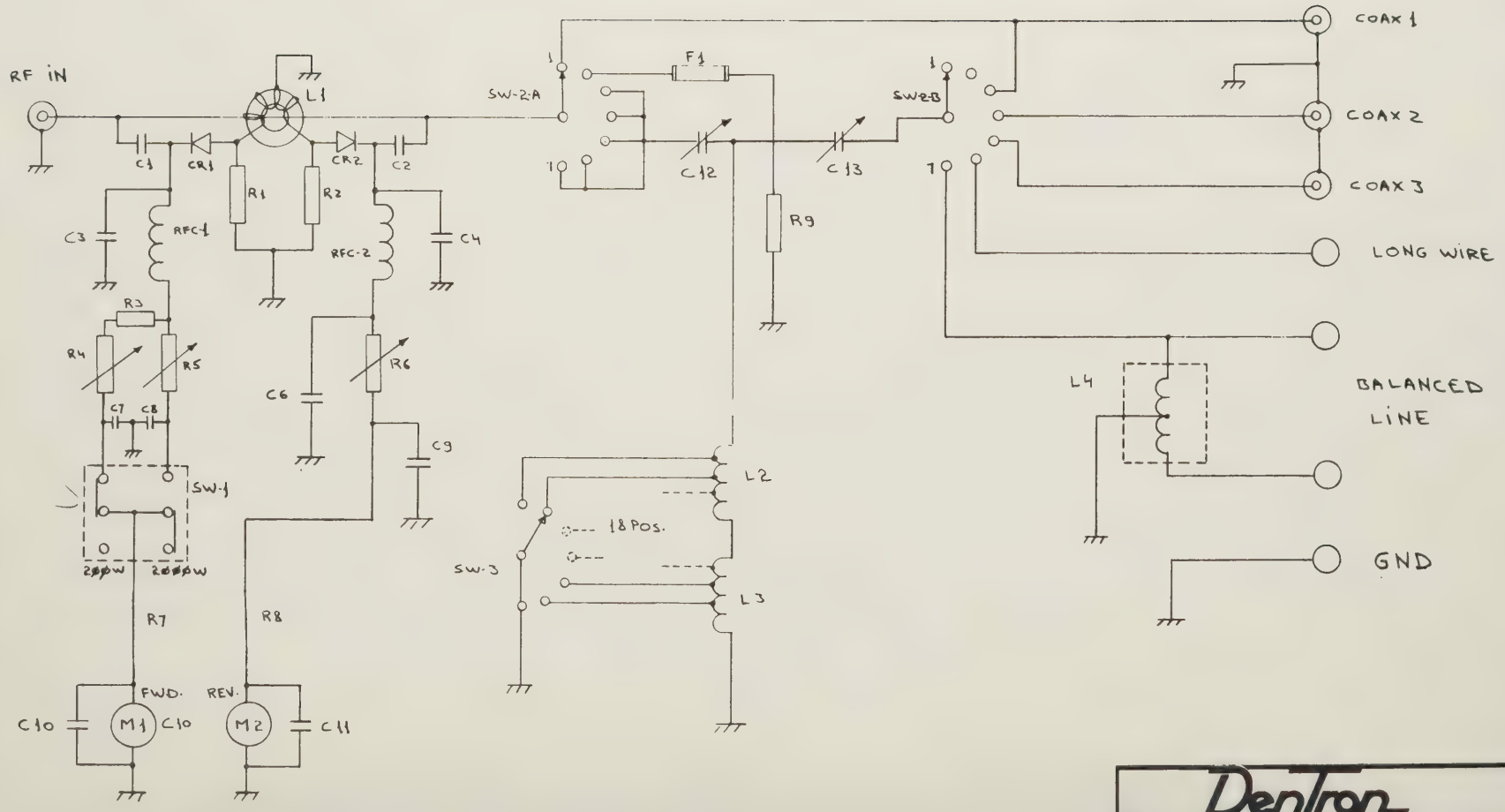


MT-3000A

Operating Manual

MT-3000A

Operating Manual



DenTron

APPROVED BY: Cornell Dubilier

DRAWN BY: S.D.

SCALE:

DATE:

MT-3000-A

DRAWING NUMBER:

Operation

1. Switch Antenna Selector to "Dummy Load" and tune up the exciter into the 50 ohm Dummy Load; this will preset the exciter controls for a 50 ohm resistive load. Then switch to the proper antenna to be used.

2. Set "Transmitter Matching" and "Antenna Matching" controls to position 5.

3. Listen on receiver for maximum band noise while turning inductance selector for maximum noise

4. Feed enough power through the system to get a reading on the reflected meter.

5. Rotate inductance control for a drop on this reading.

6. Adjust "Transmitter Matching" and "Antenna Matching" controls for a minimum reading on the reflected meter.

Dummy Load

The MT-3000A is equipped with a built-in dummy load which can be selected from the front panel. This dummy load is capable of handling 200 watts for a period of 30 seconds.

The Duty Cycle is 50% (30 seconds on - 30 seconds off).

The dummy load is protected by a 2A fuse which will interrupt RF coming from exciter if more than 200 watts are applied to the dummy load.

Warning

Do not apply more than 200 watts of RF to the MT-3000A with antenna selector switch in dummy load position, or fuse will be interrupted and transmitter may be damaged. Do not apply RF to the MT-3000A with antenna selector switch in dummy load position for more than 30 seconds at the time. (30 seconds on - 30 seconds off)

Parts List

C_1, C_2	1-8 Pf
C_3, C_4	220 Pf
C_5, C_{11}	.01 Disc
C_{12}, C_{13}	120 Pf Variable
R_1	10 ohm ½ W
R_2	43 ohm ½ W
R_3	50 K ohm ½ W
R_4, R_5, R_6	100K ohm 1/3 W POT
R_7, R_8	15K ohm ½ W
R_9	50 ohm noninductive
L_1	Toroid Coil
L_2	Secondary Coil
L_3	Primary Coil
L_4	Ballun
SW1	Push Button Switch
SW2	Antenna Selector Switch
SW3	Inductance Switch
$M_1 M_2$	200 uA Meter
F_1	2A Fast Blow Fuse

Description

The Model MT-3000A Antenna Tuner is a precision-built, compact, high performance instrument of advanced design, providing maximum possible flexibility for the operator.

The MT-3000A is equipped with an in-line dual wattmeter showing simultaneously forward and reverse power on two separate precision meters, with front panel pushbutton switchable ranges.

The MT-3000A has been designed to match any transmitter (3000 watts P.E.P. maximum) to a multitude of antenna systems, including three coaxial lines, a long wire system, and a balanced feed line. There is also a built-in 200 watt Dummy Load which can be used to tune up without on-air interference. The MT-3000A will tune any of these systems from 1.8-30 MH_Z and it will handle a full 3kw P.E.P. Built modularly, the MT-3000 makes the ideal addition to any HF communication system operating between 1.8-30 MH_Z

MT-3000A Specifications

Frequency Coverage: 1.8-30 MH_Z Continuous
Input Impedance: 50 ohms (Resistive)
Output Impedance:

Coax 1	50 ohms nominal	May range from a few ohms to a high impedance.
Coax 2	50 ohms nominal	
Coax 3	50 ohms nominal	

Long Wire either High or Low Impedance
Balanced Line 75 to 600 ohms
Power Capability: 3000 watts P.E.P.
Wattmeter Accuracy: ± 10% full scale
Insertion Loss: .5 db or less after tuning
Dimensions: 5½" high, 14" wide, 14" deep
Weight: 18 lbs.
Front panel controls are provided for the adjustment of transmitter matching, antenna matching, inductance selector, antenna selector and wattmeter selector.
Dummy Load Power Handling: 200 watts for 30 seconds
Dummy Load Duty Cycle: 50%, 30 seconds on 30 seconds off

Warning

Do not put more than 100 watts into the MT-3000A prior to tuning. Always tune with small powers. Only after tuning increase driver gain to maximum output. Do not use inductance selector or antenna selector with power applied to the MT-3000A.

Installation

Unpacking

Carefully remove the MT-3000A from the shipping carton and examine it for evidence of damage. Immediately notify the shipping company should any damage be found.

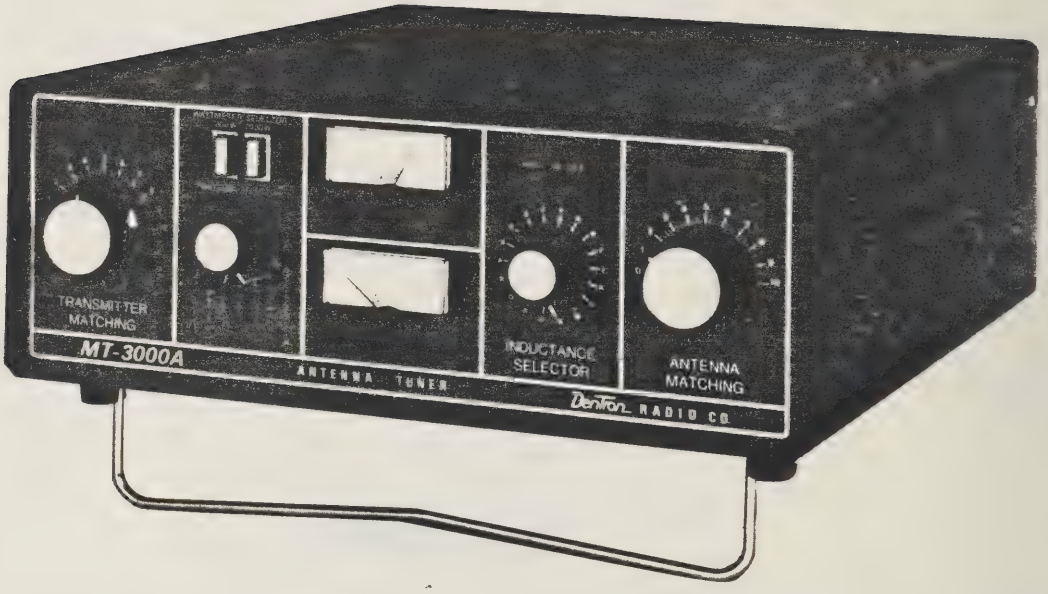
Location

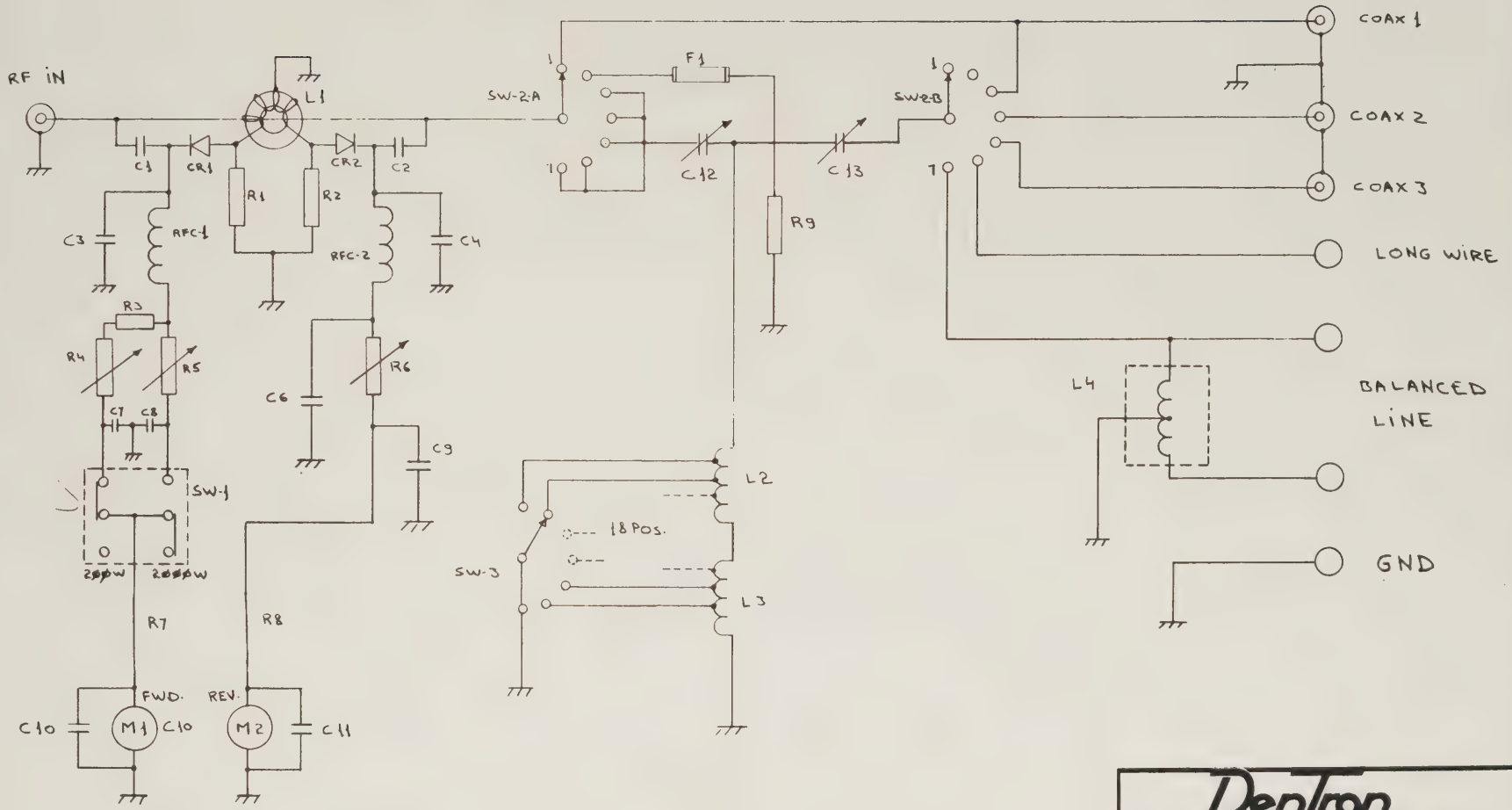
The MT-3000A will work properly in almost any location. Select a location on the operating table that will allow easy access to the control knobs.

Connections

Connect the RF Output of your transmitter to the transmitter connector of the MT-3000A, using 50 ohm coaxial cable such as RG-8/U. Connect the coaxial line of your antenna to COAX 1 connector. Connect another coaxial line of a second antenna to COAX 2 connector. A third coax antenna can be connected to COAX 3 connector. Connect a long wire antenna to post marked LONG WIRE. Also connect a good ground to GND post.

Connect balanced feed line to posts marked BALANCE. You now have a choice of five antennas and a dummy load which you can switch from the front panel. You can also from the front panel bypass the MT-3000A on COAX 1 only.


TRANSMITTER
MATCHING
MT-3000A
ANTENNA TUNER
INDUCTANCE
SELECTOR
ANTENNA
MATCHING
Denton RADIO CO.



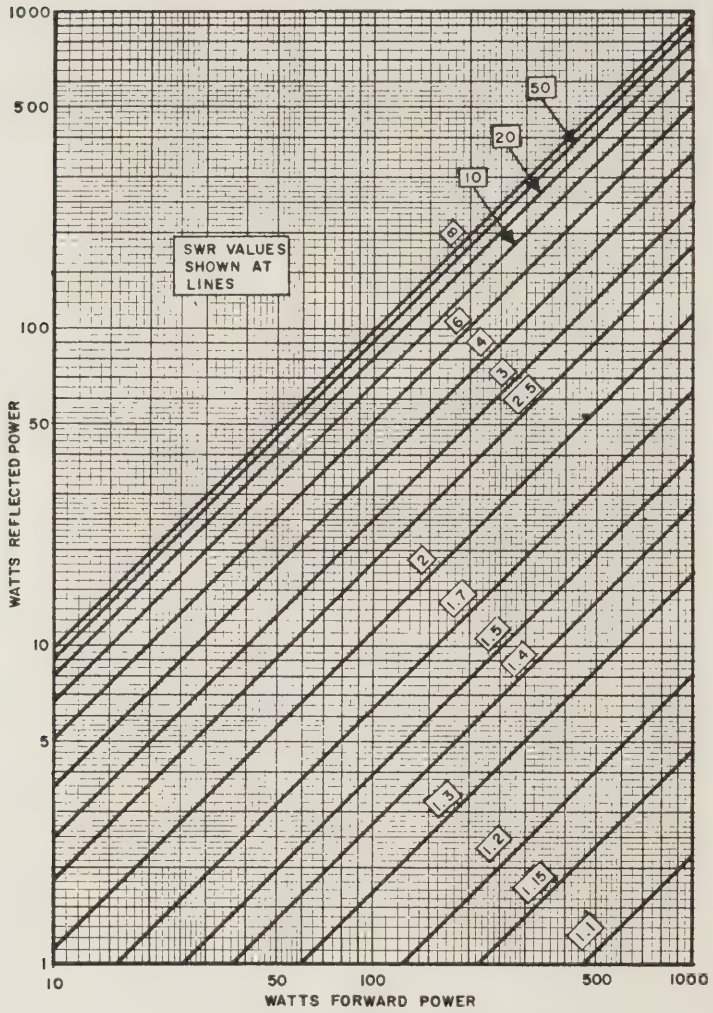
DenTron

SCALE	APPROVED BY: Cornell Dubilier
DATE	DRAWN BY J.D.
	CHECKED

MT-3000-A

DRAWING NUMBER

SWR GRAPH For Forward Vs. Reflected Power



DenTron

Operating Manual
AT-1K Tuner

DenTron

Operating Manual
AT-1K Tuner

DenTron AT-1K Antenna Tuner
1 kw

Introduction

The AT-1K is everything DenTron Tuners are famous for and more! The AT-1K includes a front panel SWR and relative power meter, and a built-in [illegible] antenna system [illegible] antennas.

When properly adjusted, the AT-1K will tune out load reactance and transform the load impedance to 50-70 ohms. A heavy duty 2 core balun is optional, so antennas [illegible] without [illegible] feedline may be properly tuned to the desired operating frequency.

Single wire, balanced feed, and coax cable fed antenna systems can be used with the AT-1K although everything from bedsprings to raingutters and [illegible] have been [illegible] DenTron tuner owners. The unit allows front panel switching of your antennas, plus tuner bypass. Another antenna selector switch position allows for permanent installation of a dummy load such as the DenTron Big Dummy.

Power handling capability of the AT-1K is 1 KW CW and 1200 Watts PEP SSB (both measured [illegible] input to the final amplifier). The unit is compact but rugged. In an all-metal tightly shielded cabinet it weighs in at less than 7 pounds.

Specifications:

Power Handling Capabilities:	1200 w PEP input 1 KW CW input
Metering:	Relative forward power standing wave ratio.
Antenna Switching:	Alternate coax bypass coax tune single wire balanced feed with optional balun
Dimensions:	H 3¾" W 10" Dep. 9½" Weight: 7 lbs.

Theory of Operation

When one installs an antenna system of any type, a complex load may exist at the input end of the feed line. Depending on the frequency in use and the feedline length, this load can be a very high or very low impedance, or somewhere in between. The DenTron AT-1K is designed to match these variations to your normal 50 ohm transmitter/receiver impedance, and thus give you maximum efficiency in both transmit and receive modes.

It is important to remember that nothing will compensate for coaxial feed line loss when it is terminated with something other than its normal impedance. In other words, a severe mismatch at the antenna end of a 50 ohm feedline can be tuned out at the other end of the line, but you still have some degree of loss in the coax, and if it is high enough, the results can be inefficiency in both the transmit and receive functions. The AT-1K, however, will overcome any ill effect on your transmitting or receiving equipment, since it will see the nominal 50 ohm load offered by the tuner.

Remember, the closer your antenna system is to a fundamental or harmonic resonance, the better it will perform. Tuning [illegible] gives you a big degree of flexibility [illegible] it does the most good.

DenTron AT-1K Antenna Tuner
1 kw

Introduction

The AT-1K is everything DenTron Tuners are famous for and more! The AT-1K includes a front panel SWR and relative power meter, and a built-in front panel antenna switch that handles up to four antennas.

When properly adjusted, the AT-1K will tune out load reactance and transform the load impedance to 50-70 ohms. A heavy duty 2 core balun is optional, so antennas fed with open wire (balanced) feedline may be properly tuned to the desired operating frequency.

Single wire, balanced feed, and coax cable fed antenna systems can be used with the AT-1K, although everything from bedsprings to raingutters and downspouts have been successfully used by DenTron tuner owners. The unit allows front panel switching of your antennas, plus tuner bypass. Another antenna selector switch position allows for permanent installation of a dummy load, such as the DenTron Big Dummy.

Power handling capability of the AT-1K is 1 KW CW and 1200 Watts PEP SSB (both measured in RF input to the final amplifier). The unit is compact but rugged, in an all-metal tightly shielded cabinet and weighs in at less than 7 pounds.

Specifications:

Power Handling Capabilities:	1200 w PEP input 1 KW CW input
Metering:	Relative forward power standing wave ratio.
Antenna Switching:	Alternate coax bypass coax tune single wire balanced feed with optional balun
Dimensions:	H 3¾" W 10" Dep. 9½" Weight: 7 lbs.

Theory of Operation

When one installs an antenna system of any type, a complex load may exist at the input end of the feed line. Depending on the frequency in use and the feedline length, this load can be a very high or very low impedance, or somewhere in between. The DenTron AT-1K is designed to match these variations to your normal 50 ohm transmitter/receiver impedance, and thus give you maximum efficiency in both transmit and receive modes.

It is important to remember that nothing will compensate for coaxial feed line loss when it is terminated with something other than its normal impedance. In other words, a severe mismatch at the antenna end of a 50 ohm feedline can be tuned out at the other end of the line, but you still have some degree of loss in the coax, and if it is high enough, the results can be inefficiency in both the transmit and receive functions. The AT-1K, however, will overcome any ill effect on your transmitting/receiving equipment, since it will see the nominal 50 ohm load offered by the tuner.

Remember, the closer your antenna system is to a fundamental or harmonic resonance, the better it will perform. The AT-1K gives you that big degree of flexibility required to put all of your power where it does the most good.

Unpacking Instructions

Carefully remove your AT-1K from its packing carton, making sure there is no damage evident from shipping. If there is any damage, notify the delivering shipper immediately, fully describing the damage.

Fully complete the DenTron Registration card included in the information package and return it to DenTron. Do not destroy the packing material, since it will be usable later on should you require factory service or need to transport the tuner for any other reason.

Installation

1. Connect a good Earth ground to the **ground terminal** on the rear panel. A ground rod is perferred, but a short, heavy wire clamped to a cold water pipe will usually suffice. If all connections are clean. It is most important to make your ground lead of the heaviest wire available and to use the shortest length possible between the ground point and tuner. Be sure to use short, direct lengths of the ground lead from your tuner to all other station equipment, especially your transmitter and linear amplifier.

   SEE ARRL HANDBOOK FOR MORE INFORMATION ON EARTH GROUNDING.

2. Connect your antennas to the appropriate output terminals on the rear panel.

   Bal. Out for balanced (or ladder) line feed.
   Coax Out for 50 to 70 ohm coax cable.
   Wire Out for long wire or random length antennas.
   Alt. Out for secondary coaxial antenna or dummy load, such as the DenTron Big Dummy.

AT-1K IN BASIC SYSTEM

CAUTION

In following steps keep your exciter power output level as low as possible until you have reached an optimum match. Increase power gradually, retuning the AT-1K after each step up in power.

Operation

1. Set tuner controls as follows:
   A. For 50 ohm settings see Chart A.

CHART A

BASIC CONTROL SETTINGS
(Into a 50 ohm resistive load)

BAND & FREQ.	TRANS.	INDUCTANCE	ANT
160 - 1.830	1	L	2
75 - 3.8	3	E	4.0
40 - 7.2	5.5	C	6.0
20 - 14.2	4	B	1.0
15 - 21.3	3.5	B	3.0
10 - 28.6	8.25	A	8.0

   B. For an unknown antenna system:
   160-40 meters - Transmitter and Antenna controls at 5 on respective scales. Inductance Selector to position D.
   20-10 meters - Transmitter and Antenna controls at 6 on respective scales. Inductance Selector to position A.

2. Turn the front panel sensitivity control fully clockwise.

3. Key your exciter and apply just enough RF power to cause a reading on the relative power meter.

Caution

Keep your exciter power output low or position until you have tuned up. Then increase power gradually, readjusting the tuner with each step up in power.

4. Next, rotate the inductance selector for a minimum reading on the VSWR meter, monitoring the front panel relative power SWR output meter.

5. Next tune the antenna matching and then the transmitter matching controls for minimum reading on the VSWR meter.

6. Remember that all three front panel tuning controls interact with each other, so repeat procedure until you have reached an absolute minimum reading on the VSWR meter.

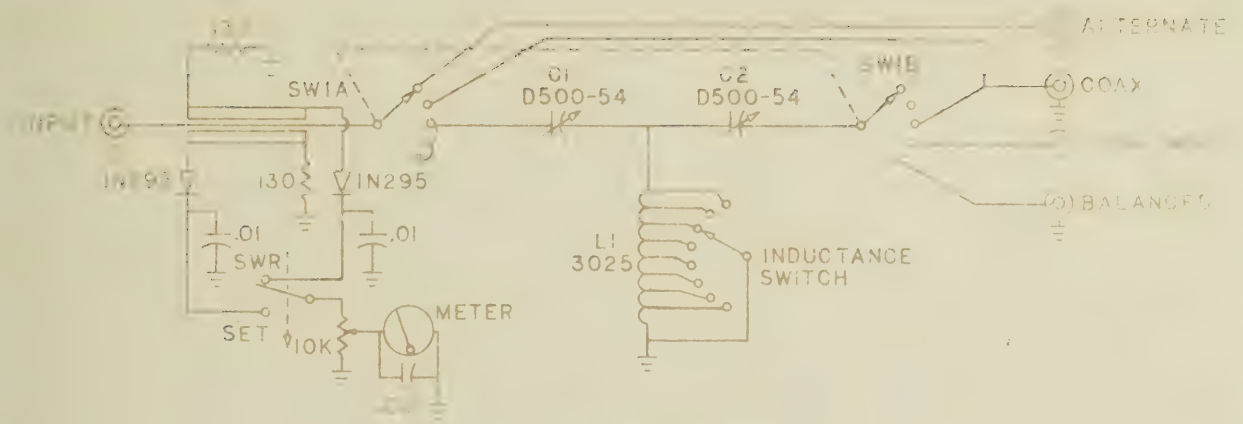
7. Once you've tuned up, make a record of each tuner setting per band. That will make for quick band changing.

8. Apply full drive to your final amplifier, push in the set/SWR sensitivity control and set the relative power/SWR meter to the set line on the scale. When released, the meter will automatically calculate the SWR.

9. For SSB modulation adjustment, push in the set/SWR control and observe the peak modulation. The meter should never go beyond 75% of full scale. If it does, adjust the audio gain control on your exciter accordingly.

AT-1K Tuner Parts List

C1	500 Pf Variable
C2	500 Pf Variable
L1	Tapped Inductor
SW1 A&B	5 Pos. DP ceramic SW.
Ind. Sw.	12 Pos. SP ceramic SW.

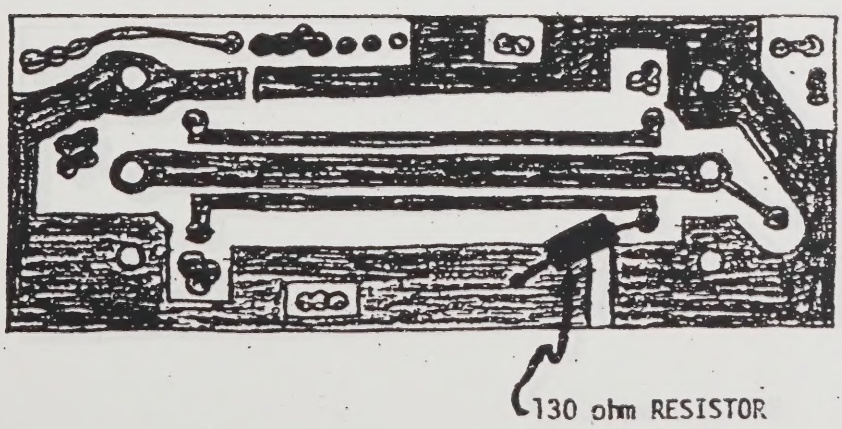


AT-1K SCHEMATIC

NOTICE

IF YOU PLAN TO USE YOUR AT-1K TUNER AT LOW POWER AT ALL TIMES (100 WATTS OR LESS) REPLACE THE EXISTING R RESISTOR WITH THE SUPPLIED 1K. SEE DRAWING BELOW FOR LOCATION.

IF YOU USE 100 WATT OR MORE LEAVE THE ORIGINAL RESISTOR (130 ohm) IN THE AT-1K. WITH THE ORIGINAL RESISTOR, THE SENSITIVITY OF THE SWR METER WILL BE SLIGHTLY LOWER AT LOW POWER.



NOTICE

IF YOU PLAN TO USE YOUR AT-1K TUNER AT LOW POWER AT ALL TIMES (100 WATTS OR LESS) REPLACE THE EXISTING R RESISTOR WITH THE SUPPLIED 1K. SEE DRAWING BELOW FOR LOCATION.

IF YOU USE 100 WATT OR MORE LEAVE THE ORIGINAL RESISTOR (130 ohm) IN THE AT-1K. WITH THE ORIGINAL RESISTOR, THE SENSITIVITY OF THE SWR METER WILL BE SLIGHTLY LOWER AT LOW POWER.